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PRINCIPLES OF EDUCATION



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TORONTO

PRINCIPLES OF EDUCATION

APPLIED TO PRACTICE

BY

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MARYLAND STATE NORMAL SCHOOL, BALTIMORE,
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PREFACE

THIS is the day of pedagogical unrest. The history of education has never found a time when the struggle (1) to derive sound educational theory, and (2) to realize that theory in actual practice, was so keen as at the present time. Strangely enough, one of our most serious problems has been to get a proper orientation by first defining the aim of education. This is one problem in which our unrest is rooted.

Specialists of recent years have offered us a multitude of definitions of education in attempts to fix the aim, only to meet the persistent criticism from teachers that "the definitions are not practical." Many of these formulations have really been too magnificent to stand the wear of service, others have been as intangible as indefinite, while still others undoubtedly would have proved satisfactory to teachers had there been some one at hand in sufficiently close touch with both theory and practice to have worked out the aim in terms of actual teaching experience. The fact is, theory and practice can never unify until, among other things, our statement of the aim of education is worked out in terms of actual teaching. This is a second problem in which our unrest is rooted.

A third problem, well related to the other two, is confronting us. Teachers are in need of guiding lines, of sound theory in the form of fundamental principles upon which they may build practice. In no other way can practice be unified, yet progressive and safe. Here arises the question, Have we a system of principles which we may say constitutes a science of education? The fact is, educators hesitate to say that we have a science of education. We have discovered many principles of education, specialists talk about principles, and we have books on principles, but our serious need now is the definite statement of these principles and their organization into a system that may be realized in the schoolroom. This is a third problem in which our unrest is rooted.

It is a significant fact that the very expression "principle of education" has astonishingly little meaning to the great body of our teachers. What we may call our science of education, then, with all its imperfections, is far in advance of the teaching art; and our educational advance is actually waiting on the unification of our science and our art. This unification must wait, in turn, on those workers in the field of education who are in close touch with both theory and practice. We have a right to look to the Normal School, first of all, to solve this problem; for it is the very Normal School Idea in essence. It is a serious task; but progress lies behind it.

With full recognition, then, of the magnitude of the undertaking, and with quite as full recognition of my own limited abilities, the preparation of this volume has been dominated by a threefold purpose already suggested; namely, (1) to state the aim of education in a form at once suggestive and tangible to teachers; (2) to work out that aim in terms of actual schoolroom experiences; and (3) to give definite yet simple statements of a group of principles of education, and to reveal them as they are to be found in concrete in the schoolroom.

For much that may be found of value in this book, I freely express my obligations to a group of educators, my teachers in the main, especially to Professors John Dewey, E. L. Thorndike, Henry Suzzallo, George D. Strayer, William James, and Hugo Münsterberg. The book reveals clear traces of John W. Cook, Charles A. McMurry, Arnold Tompkins, David Felmley, and so on to the end. The element of "reference" in the three forms of conscious activity was suggested to me in a series of Illinois lectures by Dean Thomas M. Balliet, of the School of Pedagogy of the University of New York; and for suggestions from sources too numerous to mention individually, I am indebted to writers upon educational problems.

W. F. J.

STATE NORMAL SCHOOL,
BALTIMORE, May, 1911.

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PRINCIPLES OF EDUCATION

CHAPTER I

THE MEANING OF EDUCATION

THE AIM OF EDUCATION

EDUCATION is the direction of the experience of an individual with the aim of making him willing and able to realize the values of life.

It is the purpose of this book to work out this aim of education.

THE VALUES OF LIFE

A child who is curious to know a bird in a cage opens the door of the cage, and the bird escapes and is gone. The mother appears on the scene, and the child is arraigned. Now our child may not be an ordinary child; but standing there self-convicted, yet hard-pressed for a way to escape impending punishment, he wills and is able to answer, "It was I." Such a child the whole race values; for he is a bearer of truth, and truth is valued by every one. Briefly told, truth is a value of life.

A farmer appears on a grain dealer's scales with a

load of grain. The dealer weighs the grain, accepts it, pays for it, and the farmer is gone. Presently the dealer discovers that his scales were in error, and that he underpaid the farmer for his grain. Now that grain dealer may not be an ordinary dealer, but he dispatches a messenger who overtakes the farmer and pays him in full for the grain. Such a dealer the whole race values; for he is honest in his dealings, and honesty is valued by every one. Briefly told, honesty is one of the values of life.

It is hardly to the purpose here to catalogue the values of life, for their name is legion. Life is not mean and narrow, but rich and full of possibilities to realize values. The purpose here is rather to lay the foundation for a principle which will serve as a standard for judging whether or not a given end is a life value. We all value life, we all value progress, morality, social efficiency, happiness, the ideals of beauty and truth and harmony and religion, and so on to the end. Though we may not always act in accordance with these values, yet down in the depths of personality we always will them, for they are our deepest will. The fact that we all value them and will them means that they are valuable for every one, and hence tend to give us an ideal world. The values of life are ends that are good for every life; and any life, any soul, is valuable in the degree that it realizes ends that are of universal good;

and any life, any soul, is worthless in the degree that its doings stand in the way of universal good.

Principle.—The values of life are ends that are good for every one; and life itself is valuable in the degree that it realizes ends that are of universal good.

THE PLACE OF EXPERIENCE IN THE EDUCATIVE PROCESS

Experience is contact of the individual with the world about him, and the results. This contact is effected through the senses. Thus a child's finger comes in contact with a hot stove, and he receives an experience. The next time the child sees the stove, it is hardly the same object to him; for it now has a value to him, in this case a negative value, and he refuses to touch the stove as before. The result of the contact lingers in the form of brain changes; and we speak of the lingering result as the child's experience. If the experience ended with the moment of contact, it could hardly be said to be valuable; for the child would know no more of the object after the contact than he did before, and "past experience" would be no guide to conduct.

In spite of the first contact, which in the given case was unfortunately negative, the child gets further sense contacts with the stove; namely, he feels its heat, sees it manipulated by others, sees his food prepared on it,

and so on. In this way he gains in time many cues to the value of the stove. Without such experiences with the stove, he could never come to know it; hence he could never evaluate it. The only real teacher is experience.

Principle. — The sole cue to value is experience; and experience is the only teacher worth the name.

Experience may be distinguished into two types; namely, personal and impersonal. Personal experience is first-hand, or direct, experience; that is, direct contact of the individual with the environment. Thus an individual falls into water, hears a bell, sees an island, tastes quinine, smells a rose, touches ice, etc. These sense contacts of the individual with the objects are direct and personal; hence they are called personal experiences. Now it would seem that the child could receive such experiences from other persons; that is, that he could be told of the experience by one who had fallen into water, heard a bell, seen an island, and so on. Such indirect, or second-hand, experiences are known as impersonal, since they may be communicated, or handed along from one person to another in an impersonal way; that is, without reference to any given person.

It is of the highest importance to note here, however, that no person could receive or comprehend an impersonal experience unless he already possessed personal experiences sufficient to interpret, or give meaning to, the impersonal experience as related by another. An

individual who had never seen water, had never seen a liquid, had never seen anything fall into a liquid, and so on, could hardly understand one who tried to tell him of the experience of one who had fallen into water. Personal experience is therefore the basis of all knowledge; and until a child has had some personal experience in the world, instruction is impossible. It is therefore evident that any instruction must begin with the experience of the learner.

Principle. — The beginning point of all instruction is the experience of the learner.

It is very evident that teaching efforts have woefully violated this principle; and immeasurable waste has been the result. No subject of study has escaped. Grammars have been stuffed with scholastic definitions meaningless to children; mathematics, with antiquated and adult problems quite out of range of childhood experience; geographies and histories, with isolated facts to be ground into memory by mere repetition; and the physical and biological sciences have been made so dyspeptic by book feeding that they hardly dared venture out of doors. Not even the Bible has escaped; for children in the primary grades of Sunday schools have been fed the highly concentrated wisdom of Solomon, and armies of six, seven, and eight year olds have been offered the beautiful lines which strain the interpretative experience of the adult: —

“The Lord is my shepherd ; I shall not want. He maketh me to lie down in green pastures : he leadeth me beside the still waters. He restoreth my soul : he leadeth me in the paths of righteousness for his name’s sake. Yea, though I walk through the valley of the shadow of death, I will fear no evil : for thou art with me ; thy rod and thy staff they comfort me.”

The progressive teacher of to-day, however, will hardly assume to present an impersonal experience to a child, until she knows whether or not the child has an actual experience basis adequate for comprehension. There was a time when the school proceeded on the assumption that it could get along without experience ; but to-day the efficient teacher strives to root instruction in the personal experiences of her students. If she finds them deficient in necessary experiences, she takes them out to see the islands, the river basin, the hills ; or she brings objects into the classroom to reveal essential facts at first hand ; language material is derived from the child’s own speech ; indeed, nothing is offered without evidence that it will find meaning in the life experiences of the child.

We hear on every hand nowadays that history, geography, nature study, etc., should “begin with the child’s own environment and work outward.” “From the near to the remote” is the old way of saying the same thing. Now the fact is, mind cannot learn in any other way ;

and when teachers recognize the fact that it matters not what one would teach a child, that child must have enough of his own life experiences to give meaning to the new, the impersonal experience, before he can receive it, then teaching will be safely founded upon the basis that an impersonal experience can be made personal only by relating it to personal experience. This is the function of the school.

Principle. — It is the function of the school to make impersonal experiences personal, through the life experiences of the child.

The school must not be negligent in its experience-giving function. If the child can get more valuable experiences around the fishing pond than in the school, then the fishing pond is in reality the school, and it puts the would-be school to shame. If the youth can get more vital experiences out of the farm routine than he can get in the agricultural school, then again the school is put to shame. Our better schools are struggling nobly to meet this requirement, and the schoolroom is being stocked with materials for giving genuine experiences. We have begun to realize that experience-giving is the fundamental work of the school. Sand tables and school gardens and work benches and laboratories are replying, and the four walls of the little old-time schoolroom are now being widened out by excursion and incursion to include the farm and the workshop, the factory

and the railroad, and the whole world is indeed giving to the school a world of experience-giving materials.

Principle. — The school is fundamentally an experience-giving institution, and if it cannot give more vital experiences than the child can get anywhere else in the world, it has no valid claim upon his time.

So thoroughly valuable is experience that it is doubtful if an individual ever meets one which may not be useful in some way at some time; yet among the individual's contacts with the world, it is easily seen that there is a wide range of values. Just how valuable an experience proves to be depends upon its usefulness as means of reaching the ends which are valuable in life. Thus a given experience with dangerous cattle is likely to be more valuable to a cowboy than to an accountant, and a given experience in systematizing accounts is likely to prove of more value to the accountant than to the cowboy. An experience with the dangers of a live wire is likely to be of vastly more value to a pole-climber than to a sailor, while an experience related to the preservation of life in water is far more likely to prove of value to a sailor.

Principle. — Experience is valuable in the degree that it is useful in realizing the values of life.

When, in the history of the race, man's experiences led him to discover a device by which a man's weight could be made to lift a ton, that experience was treasured up and handed along to the next generation. The lever,

the pulley, and the other elementary machines now give us all valuable experiences. When man's experiences led him to discover that a few symbols could be used to represent experiences, and thus serve as a means of communicating those experiences, those symbols were treasured up and handed down to the next generation under the name "the alphabet." When some man's experience led him to discover a rule for finding the area of a triangle, that rule became a racial endowment. Thus arose the course of study.

It is of the highest import to note here that neither the historic symbol nor the mathematical rule can mean anything in itself, and that the only way that either can become valuable to an individual is through its usefulness as means of handling experiences. An individual reads to gain experiences, he writes in order to convey experiences, and he uses arithmetic to help him calculate his experiences. Only a superficial view can prompt one to say, "The three R's are the essentials;" for they are but mere servants in handling the only essential; namely, experience.

Through the thousands of years that the race has been gaining experiences, the course of study which it offers to its young has been growing. Life is too short to allow an individual to reexperience all the valuable experiences of the race; hence the school must now select, out of the whole wealth of impersonal experiences, those

which are deemed most valuable to the oncoming generation. Thus the problem of elimination from the course of study is thrust upon us, and there is no study in the curriculum which has not already felt the pruning knife. It is not because the greatest common divisor, duodecimals, partnership, cube root, and progressions are without value that they have been eliminated from arithmetic, but because we would have time for subject matter that promises to be more valuable to the life of the coming generation.

Principle. — The course of study is a selection of those impersonal experiences of the race which we believe will be most valuable to the life of the child.

If any person will take the time to catalogue as best he can all of his experiences of a single day, and then classify them under the heads, geography, history, physics, arithmetic, and so on, to include all of the common school subjects, he will find that life is a highly complex mass of experiences. He will also find that the list of experiences which fall under any given head, say arithmetic, represents only a very limited aspect of the day's experience. The school subjects, therefore, split up life in artificial ways; but this is justifiable on the ground that when we start in with a given subject, we need enough experiences in that subject to enable us to reach some definite end, before dropping that subject and going to another. Briefly told, a subject of study is

an artificial but intensive aspect of, or way of looking at, experience.

Principle. — Subjects of study are intensive aspects of experience.

Tradition has fixed the lower school age threshold at six years. Before this time the child is allowed to gain experiences in a more or less haphazard way; yet such is his impulsive nature that he is continually coming in contact with the world on every hand, prying into things, now with this sense, now with that, so that when he enters school he brings with him a rich life experience of six years. Now a disastrous break in this experience-getting process is likely to occur; and instead of continuing, increasing, and ordering actual experiences, the child's attention is summarily directed to the conventional symbols, the driest bones of the school. In short, the alphabet calamity is at hand. Penetrating educators have been shouting their protests against this time-worn procedure, and we are now beginning to realize that experience is the essential, and that the three R's, the formal symbols, are but tools for manipulating experience. The best primary schools of to-day are striving to prevent the traditional break in experience-getting when the child enters school, by continuing the genuine experience-getting process and bringing in the conventional symbols, or tools, as the child is led to see his need for them in his struggle to reach what he values.

The traditional value set upon the three R's is such that we have not only begun the formal symbols too early, but we have hardly known when to cease the formal studies. Fortunately, again, the more aggressive schools have displaced the fifth and sixth readers with literary study, writing has been held up at the point of diminishing returns, and arithmetic has been reduced to an experience basis. The fact to be noted here is that when the formal subjects are taught, not as ends in themselves, but as means of manipulating experience, then the hitherto obtrusive forms will have found their safe limits, and they will cease to dominate the work of the grades. The formal studies will then disappear as special subjects of the curriculum as soon as the child has worked with them long enough to enable him to command them in a reflex way; that is, when he can proceed with his reading, writing, and figuring without having to stop to think what the symbols mean, while his mind is engaged with the experience which these tools are assisting in handling.

Principle. — The formal subjects of study should be taken up when the experience of the child indicates their need, and they should disappear as special subjects of study when the use of their forms becomes reflex.

Schools have, and must have, a large dealing with books. Books are storehouses of impersonal experience. It has already been pointed out that a mind can receive no impersonal experience, unless it has sufficient personal

experience to enable it to interpret the impersonal. A book, therefore, must be suited to the reader's experience, otherwise the reader cannot profit by it. The farmer does not read the journal of psychology, for the reason that he lacks personal experiences in the psychological field sufficient to enable him to understand the journal of psychology; but give him the farmer's journal, and he is probably at home at once. Now will it pay the farmer to read the farmer's journal? The only possible answer is conditional. If the journal contains a single article that is of value to the farmer, it must fulfill two conditions: namely, (1) it must deal with subject matter (say lemon oil and corn root louse experiences) within the scope of the farmer's own personal experience; and (2) it must reveal values (say the fact that if the seed corn be treated with lemon oil, the corn root will be immune to the louse) hitherto unknown in the farmer's own experience. There is no book, be it a primer or a calculus or a Bible, but whose value to the individual is fixed by this law; and the violation of this law is to-day doing more to invalidate book teaching than all other causes combined.

Principle. — Books are valuable instruments of education in the degree that they reveal values in the reader's own experience.

CHAPTER II

THE SUBJECTS OF STUDY

IN the preceding chapter the aim of systematic education was stated to be the direction of the experience of the individual to the end of enabling him to function in the values of life. It was there pointed out that the subject matter of education is EXPERIENCE; and that to the end of more effectively directing the giving of experiences to the child, the school catalogues life experiences under the heads indicated by the so-called subjects of study. It falls to the purpose of the present chapter to deal with these subjects of study, in the hope of setting a few standards for judging their value as means of enabling the child to realize the values of life.

It should be noted here that since subject matter is experience, the method by which we may teach any given subject matter is very largely determined by that subject matter, or experience. To illustrate: if each of two teachers attempt to teach a child how to plant an apple tree, the method of giving the experience in either case will have to be in all essential respects like that employed in the other; namely, it will have to consider digging

an adequate hole in the ground, and setting the tree in neither too shallow nor too deep, and pressing the dirt about the roots with sufficient firmness to hold the tree in place, and so on. The method used in planting the apple tree could not be used for hitching a horse, for the reason that either process very largely dictates its own method. So, too, the method used for hitching a horse would hardly answer for a method of extracting the square root or of killing mosquitoes or of conjugating a Latin verb. Method is far less artificial than most teachers are ready to believe. In the present chapter, therefore, no effort will be put forth to separate subject matter sharply from method; and for the reason that:—

Principle.—Subject matter is impersonal experience, and any experience determines more or less definitely its own method of teaching.

Since experience is the only real teacher, it follows that all knowledge must come through contact with objects, animate or inanimate, and that one environment will be richer or poorer in educational possibilities than another. Thus we speak of a musical “atmosphere” as the place to study music, of a literary “atmosphere” as the place to study literature, etc. Mind is, in varying degree, the victim of its surroundings. A rich experience enriches mind, and limited subject matter limits mind. However great the native gift of a genius, he must have opportunity before he can reveal. To be specific, an individual who

has never seen the color blue cannot know blue as we know it; and the only way he can ever thus know blue is to see blue objects. So, too, one who has never heard a bird sing cannot know the song of a bird; one who has never smelled a rose cannot know the scent of a rose; one who has never felt the cold cannot understand cold, etc. Comenius therefore realized a fundamental law of mind when he formulated his maxim: —

Principle. — There is nothing in the mind not previously in the senses.

There is another aspect of subject matter which must not be allowed to escape the teacher. An individual who has never seen the color blue cannot know whether or not he likes blue; that is, he cannot know his own mind in reference to blue; and the only way he can ever reach such knowledge of himself is to see blue objects. So, too, an individual who has never heard a bird sing cannot know whether the song of a bird pleases or displeases him, and the only way he can ever know his own mind in this respect is to hear a bird sing.

A little further thought will reveal the fact that an inanimate object can hardly reveal love, and were a man alone in his world he could never feel and know love as we now feel and know it. So, too, the isolated individual could not know sympathy and social harmony, jealousy and anger, or any of the pro-human impulses; and he could not know himself in reference to them. But give

that individual a single companion in the world, and in a thousand ways the individual will find himself revealed.

Principle. — Mind never knows itself, except as it is revealed to itself through objects; and nothing less than a soul can fully reveal a soul.

Contact with the world of persons and of things is therefore the only means through which the mind may know either itself or the world outside. It is the only teacher; hence it is our only means of training the child to will the values of life, or of developing his ability to realize them. Since all experience thus comes through (1) contact with things and (2) contact with persons, it follows that the course of study will naturally be divided into (1) nature studies and (2) social studies.

I. THE NATURE STUDY GROUP

Nature Study

The most individual, intrusive, and ever-present view of the function of man is to realize his purposes, or the ends which he values. Man finds himself confronted by a world of persons and of things, each and every one of which has its functions in the world. Now it is significant that the functions of many objects correspond with the purposes of man, while the functions of many others oppose and even thwart the purposes of man. It is therefore of the highest importance to man to know

not only his own functions, but the functions of things in his environment. To illustrate, one of the functions of granite is resistance to the attacks of weather. When man, therefore, purposes to build an enduring tomb, the granite functions with him, though in preparing and shaping the material the granite functions against him. Experience teaches man the need and the ways of controlling the granite, so as to make its functions correspond with his own. This process is a process of give and take; that is, of interfunctioning.

By way of further illustration, one of the functions of flowering plants is seed production and distribution. To the end of effectively carrying out this function, the cherry seed is made to inclose its seed in a hard coat, and to cover the whole with fleshy food attractive to many birds and to man. One of the functions of the bird and of man is the maintenance of life through food consumption. The bird and the man thus carry away the cherry fruit to satisfy their food-consuming function on the edible portion of the fruit, but they drop the vitally incased seed to the ground, thus realizing for the cherry tree its seed-distributing function. Here again we see the give and take, the interfunctioning process, realizing the values of lives.

Man studies the granite, the tree, indeed all nature, in order to enable both nature and himself to function; and until he understands nature, he is neither inclined

nor able to control the interfunctioning process with her. Nature has given us nothing whose functions are either wholly good or bad as means of enabling man to function, hence all life is an interfunctioning process.

Principle. — The aim of nature study is to give the child such experiences in the world of nature, as will make him willing and able to control the interfunctioning of man and his natural environment, to the end of realizing the values of life.

Geography

Since geography is one of the nature studies, the aim of the nature study group as already given covers the geography aim, and perhaps a mere statement of the specific aim of geography will enable us to proceed.

Principle. — Geography aims to reveal values in the process of interfunctioning of man and his physical environment.

Not long since geography was regarded as a study of place. When the child had learned where the countries, where the seas, where the deserts, where the heaviest rainfall, the mountain chains, the staple productions, the seats of government, the gulfs and bays and capes and so on, the teacher of geography was satisfied with her work. A new era is now at hand. We would still know the where, but to this is linked the why. The causal factor in geography is quite as important as that of place. If the fig functions well in Smyrna, a knowledge of why

it thrives well there may enable man to make it function elsewhere. If the vine thrives well for the Spaniard, a knowledge of the cause may make it function as well for the Yankee. Now every unit of physical environment has its potential functions, its possibilities. The important question from the human standpoint is, Can man do anything to make it function better for the race? It is evident that a mere knowledge of place cannot enable us to reach values that such a motive seeks; and everywhere in geography to-day we would penetrate to cause.

Principle. — The causal factor in geography is quite as important as the place factor.

An illustration of the inability of man to control the interfunctioning process between himself and his physical environment may indicate where the search for cause leads us. — Asia is perhaps the first and oldest inhabited continent. Notwithstanding the time opportunities, Asia perhaps shows us to-day the most backward and helpless of civilized tribes. Now suppose we limit our search for causes to the interfunctioning of man and his purely physical environment, and see if an explanation is forthcoming. In the first place it is a recognized fact that in the evolution of the human race, man's most rapid progress has never taken place under either extreme of demand made upon him by his environment. Too bounteous surroundings foster laziness, and static conditions

at once appear. Too hard demands lead to discouragement, and the glow of mastery is gone, and progress is choked. Now death always begins where growth and progress end; hence in the face of either extreme of environmental demand some tribes have disappeared, and some have been rescued by migration.

Hear now the story of Asia, the land of extremes. On the great Siberian plains, man has yielded to cold. The very name, Siberia, is a synonym for icy blast. On another hand, the plains of Arabia are a burning desert. Thus physical Asia shows us her cruel jaws in the two extremes of heat and cold. Again, on the southern slopes of the Himalayas, we find the heaviest rainfall known to man. Seventy feet of water fall in a single year. It is a rainy day there, and man's ambitions are tied up. On another hand, almost within sight of the region of downpour, lies the Desert of Gobi, where a drop of moisture is never known. Yet again, the Himalayas are the highest mountains of the globe, Mt. Everest the crowning peak, and Thibet the highest plateau inhabited by man; while sloping away to the Arctic is an unmeasured lowland, with its manifold miles of intermittent bog and ice. Still again, the river basins of Asia have revealed the highest type of fertile soil, indeed, the Garden of Eden may have been in Mesopotamia; while the deserts, spotting the continent here and there, are the very opposite. Once more, the fertile valleys of China

show us the most densely populated regions of the globe, and the lazy tribes that have filled them are the most static known to man; while, on another hand, those bitter plains of the Arctic are the sparsely settled regions of the earth, where the energetic libertines of Russia are sent to murder time.

In the presence of a world of manifold extremes, then, the Asiatic has remained a child. Overawed and silenced by obstacles which he could not master, he has not progressed. Asia has been a splendid place to teach man to reverence powers mightier than he, and it is this very Asia that has given the world its religions. Confucianism arose there, and Mohammedanism; and Christianity was born there. Man has ever looked upward when insurmountable obstacles cut off his vision outward; and Asia has been well fitted to teach mankind the lessons of filial obedience, humility, and religion in the infancy of the race. Once more, perhaps, we may note that there is nothing in the world that is either wholly favorable or wholly antagonistic to the functions of man; and all progress, all life, is dependent upon interfunction.

The Biological Studies

The principle defining the aim of nature study holds throughout the nature group; hence it includes botany, zoölogy, and physiology. If we take an intensive view of botany, we are perhaps inclined to define it as the mind's

formula for its experience with plants. Likewise we may define zoölogy as the mind's formula for its experience with animals; and physiology as the mind's formula for its experience with human bodies. Such views and such definitions put the stress upon the plant and the animal, rather than upon the textbook; and it is wholesome in any field of study to keep the vision beyond books and upon real experiences. Now since we are dealing with common school subjects, we shall not treat botany and zoölogy more fully, but turn our attention immediately to physiology.

Perhaps there is no subject of study whose teachings are so negated by the school itself as physiology. It is not an uncommon spectacle to see teachers giving lessons on hygiene to students who should receive it with astonishment; for perhaps the very schoolroom is badly cleaned, dusted, and ventilated, and the examination grind directly responsible for underexercise and lack of sleep. Headaches are commonly received as a matter of course, and slumps in efficiency are diagnosed as laziness. Drinking facilities are mean and common; and six-year-olds are subjected to overconfinement. The fact is, we shall never reach the physiological values of life, and our hygiene will be empty and formal, until our physiology is based on experience. We must rely less on textbook physiology, and more on the headaches, the eye aches, the muscle ache, the inability to study, the lack of sleep,

the swimming of the head, the slumps in efficiency, the general health, the diseases,—in short, on real physiological experiences. It is extremely doubtful if there is a more inefficiently taught subject in our schools to-day than physiology; and there is none that should reach more life values. The human body cannot properly function so long as it is thwarted on every hand, or on any hand, by the food, the air, the water, the meager exercise, the late hours, the unclean habits, and the manifold attacks of the environment. The natural environment may function well for us, but it is a dumb and dangerous environment, and our only safety lies in the fact that experience can teach us to know what and how to give and to take; namely, to interfunction well with that environment.

Principle.—The teacher should lay practical stress upon the five physiological essentials, — exercise, pure air, sound sleep, proper nourishment, and cleanly habits.

Mind cannot be reached independently of body, and if the neural mechanism is out of order, mind is bound to suffer. The psychologist of to-day defines mind as brain function. The stomach has its function, say digestion; the liver has its function, say bile secretion; the lungs have their function, say respiration; the heart has its function, say circulation; and the brain has its function which we call mentation, or mind. The brain function theory of mind makes the psychical processes far

more tangible than did the old soul theory of mind, and it makes the physiological processes the determinants of mind processes. Inability to study to-day may be due to bad feeding yesterday; nervousness and flitting attention, to bad digestion; slumps in school efficiency, to anemia; anergic stupor, to deficiency of hemoglobin; loss of memory, to loss of sleep. The physiological processes touch the school values at every breath; and when our physiology teaching is based on genuine bodily experiences, we shall have better bodies and also better minds. Education cannot hope to perfect the intellectual, and at the same time neglect or violate the physical; for there are no mental processes that are not completely determined by corresponding brain processes. The moment the brain processes stop, that moment we have unconsciousness.

Principle. — The school must strive to realize its physiology teaching, seizing appropriate opportunities to realize the fact that all mental processes are completely determined by corresponding physiological processes.

2. THE SOCIAL STUDIES

History

History has been widely mistaken for a memory grind, and few subjects have fallen so short of possibilities. Committing and reciting pages, with no definite aim, has been the usual history work; and ever in school work

it has seemed to be the rule that memorization came in wherever no definite aim was in control. The fact that teachers themselves have not discerned the immense value of real history has resulted perforce in the failure to realize history values; for one who does not clearly discern the purpose of a tool may hardly be expected to use the tool effectively and well.

History, if it is history, reveals the real struggle of the race to reach ideals, or values of life. Throughout the world and in all time man has struggled to reach what he believed to be his highest good. He is still engaged in that serious struggle, with the advantage that he has the experience of the race to guide him. On the one hand, men have made mistakes in the past, for they have often failed to reach the values for which they struggled. Different experiences, different purposes, different opinions of the same purposes, have led men into social disharmony; and since one man always opposes another when they fail satisfactorily to interfunction, history is replete with social breakdowns, rebellions, and bloody strifes for the values of life, real or assumed. Now all these mistakes of the race are valuable to man to-day, if in no other way, then in the one way of revealing to him negative values; that is, what he should not do. No teacher should lose sight of the fact that the history of wars reveals the deepest wills of men; hence it enables us to understand men.

On the other hand, men of the past have often succeeded in reaching genuine values of life; indeed, we are even led to marvel at the efficient work of man here and there in the past. History can reveal to us how and why. History, indeed, is a veritable mine of life experiences; and the youth of to-day studies history that he may profit by the experiences of the race. The great problems of the race do not die, but are ever present; and history is immensely valuable in that it reveals the evolution of their solution.

Principle. — History is valuable in the degree that it reveals the life problems common to the race, and the means which the past has used in their solution.

The teacher of history complains, with more or less justification, that history texts are still badly written; that their aim seems to be "description of facts." Facts of history we must have, but the truest history comes through the interpretation of facts. Not the objective coming and going of men, not the mere clash on battle-fields, not the account of dynasties; in short, not the external fact in history is the real value; but we must understand the subjective, the internal, the mind in its struggle to function; in fine, we must know the will that is reaching out after the values of life and thus is the real cause of the facts. A textbook in history is not good unless it narrates life problems, and clearly indicates what means the past has used in its struggle with them,

and wherein those means have succeeded and wherein they have failed.

Principle. — A textbook in history should be written in the form of narration, with the life problems, and the means the past has used in their solution, clearly set forth.

The actual procedure in history teaching reveals the following steps: —

1. Ascertain the ideal, or value, which the individual or group sought to realize.
2. Ascertain the means employed.
3. Judge the validity of means used.
4. Judge the validity of the ideal, or value sought, in terms of present-day standards.

The psychologist stoutly insists that the mind function which history study preëminently trains is judgment. More specifically: —

Principle. — History study is training in judging values of life and the means of realizing them.

By way of illustration of our theory of history teaching, we may use the following bit of history taken from Plutarch's "Life of Lycurgus": —

History Extract. — "It was not left to the father to rear what children he pleased, but he was compelled to carry the child to a place called Lesche (Place of public conversation), to be examined by the most ancient men of the tribe who were assembled there. If it were strong

and well proportioned, they gave orders for its education, and assigned it one of the nine thousand shares of land ; but if it were weakly and deformed, they ordered it to be thrown into the place called Apothetæ, which is a deep cavern near the mountain Taygetus, concluding that its life could be no advantage either to itself or to the public, since nature had not given it at first any strength or goodness of constitution."

Steps in Teaching. — Following the preceding outline, the steps in teaching this bit of Spartan history should be about as follows : —

1. The Spartan ideal of life (not definitely revealed in the brief extract given) was what we may call *the good soldier*.

2. The means employed, as here given, to realize the good soldier, was a negative one ; namely, the destruction of weaklings.

3. Holding the attention squarely upon the Spartan ideal, or value of life, the student now passes judgment on this means of realizing the Spartan value of life. There should be a clearance house of opinions here, with the teacher guiding ; and the conclusion reached should favor the Spartan, for the means employed tended to realize his ideal.

4. Measuring up the Spartan value of life in terms of present-day standards must reveal the Spartan a barbarian.

The contention that there are facts of history which should be known simply as facts, in order that the individual may "mingle intelligently with people," is not to be denied; but it must not be forgotten that the best cue to memory is thinking; that is, relating the history facts to be remembered to the individual's own experience. Thus the very best means of reaching the memory end are, perhaps, found in thinking out the steps as given.

It is further to be noted that, in keeping with the principle defining the value of history, history stories and biographies may be quite as valuable as any other history materials, and that when we come to the subject of wars, this principle is a much-needed guide. If the teacher will apply the history steps to any given war, she will soon realize the futility of taking up every battle, since the aim of one is essentially the aim of all. The student should study a few battles in definitely concrete, experience-revealing ways, for the purpose of enabling him to evaluate war as a means of reaching ends. The important parts of the history of a war are those portions which reveal the causes and the effects, and hence the attention should linger with the period in which the cloud is forming, and again with the period of reconstruction. Not only the procedures that succeed, but also the mistakes, are needed here; for it is only through a comprehensive view of the significant history of the past

that we can fully grasp the meaning of the life of to-day ; and just in the degree that we can and do grasp the meaning of present life are we able to anticipate the future.

Literature

We have seen that history deals with realized life, and that it offers us the richest experiences of real lives of the past, in the hope of guiding life of the present. Literature, on the other hand, deals with idealized life, life that never was, just as literature reveals it ; hence it is to our immediate purpose to inquire how the human mind comes to know ideal life, and what values literature seeks to reach in dealing with such life.

Every human mind is moved by the thoughts of its destiny. What a man is to become is a matter of the keenest interest to himself, leading him to struggle for what he believes to be his highest good. That which a man wills to become is his ideal, or unrealized, or universal, self. That which a man is at any given time is his real, or realized, self. There are two selves, then, in every human being, a real and an ideal. This is a basal fact in education, for without it there could be no education.

The ideal which the individual sets up is derived from his experience. Now and then in life the individual comes in contact with a person or a thing that reveals to him a trait or quality that pleases him more than any similar

manifestation ever pleased him before. Thus beauty, honesty, truthfulness, altruism, all virtues, indeed, are revealed to mind. These best qualities, which the individual finds in his experience, he deeply loves; and for no other reason than that they are the best that he knows and loves. Now the individual finds no one in the world that reveals all these best qualities, for the reason that no one of us is quite perfect; but since he wills such a personality, he combines all of the best qualities which he has ever met in his experiences into one personality which exists in his idea only, hence ideal. With this ideal as his standard, the individual measures those whom he meets, measures his own real self, indeed, and finds every one short of his standard. More than any real life, therefore, the individual loves his ideal; and deep down in his own personality he wills to become his ideal; for it is his own deepest will, in short, his own measure of the value of life, his image of God. Now poetry, or literature, is idealized life, for it gives us visions of the perfect. The poet, in his creative freedom, transcends reality and gives us life fully in harmony with our ideals. Thus in literature we may live in an ideal world filled with ideal personalities. An ideal world, of ideal personalities, is a world of harmony; and in living in such a world, more and more we learn to love it; hence more and more we learn to will a world of harmony. Poetry is, therefore, the harmony of humanity; and any given

bit of literature is valuable in the measure that it reveals idealized life in ways that stir the reader to will such a life. If the writer's ideals of life fail to measure up to the reader's ideals of life, then the author's work is not poetry to the reader, and it fails to move him, fails of value.

Principle. — Literature is valuable in the degree that it reveals idealized life in ideal ways.

We hear much on every hand to-day about good literature and bad literature, and the teacher needs to know where to draw the line to distinguish them.

Classic Literature

The first thing that distinguishes a great writer, or that makes his literature vital, is depth and breadth of meaning; that is, he has something to say which is deeply significant to all men; in short, he reveals a universal truth. To illustrate, we may take the little classic fable, "The Fox and the Grapes." The fox struggles to reach a value of life, a few grapes; but being unable to realize his purpose, he turns away in disappointment, yet finds a balm for his broken spirit in the immortal words "sour grapes." Now is the reader aware that the fox is here made to reveal the universal method of recovery from disappointment? It matters not what disappointment man may meet in the world, he can never recover his bearings so long as he looks on the side of the

loss; but let the individual who is mourning the death of a friend once wheel about and say, "Well, perhaps it is all for the best," and that moment the individual is well started on the road to readjustment.

To illustrate this same point with a more serious bit of literature, we may use Hamlet's soliloquy. Does the reader know that as Hamlet stands there in that soliloquy he is debating a mighty question of the ages? Is life, after all, worth living? is a question that never dies. The fact is, there is hardly a day in the year, and not a year in life, but that every one of us asks himself this very question. Hamlet's problem is indeed a universal problem; for many times in life do we all come down to the point of trying to settle for ourselves whether or not life is a business that pays expenses. Shakespeare thus reveals through Hamlet a universal truth, and when we have answered the question for Hamlet, we have seen the answer to our own.

The second thing that distinguishes the great writer is his ability to say things well. Let Shakespeare again illustrate, and he does not need a whole book. In the platform scene in "Hamlet," one of the watchmen complains, "'Tis bitter cold." Let the reader try to improve this statement; let him turn it about and alter it as much as he will. He tries, " 'Tis freezing cold." — No, not so well said. Again, " 'Tis awful cold." — Again, not so well said. After the reader has tried it in

every conceivable way, he will certainly come back and say with Shakespeare, " 'Tis bitter cold."

Again, in "The Merchant of Venice," Shylock the "Jew" is made to say, "I will go and purse the ducats." There seems nothing remarkable about this statement until the reader asks how the "Jew" might have said this better; and the more he inquires the more he yields. The "Jew" wants nothing between him and his purse but the act of going. The form "I'll go and put the ducats in my purse" is not becoming to the "Jew," for it separates him too far from his purse; and try as the reader may, he will at last come back and agree with Shakespeare that "I will go and purse" is best for the "Jew."

Summarizing our two elements, we have the —

Principle. — Classic literature is literature that reveals universal truth in ideal ways.

Illustration of Classic Literature

A TALE OF TWO BROTHERS

(AUTHOR UNKNOWN)

Abram and Zimri owned a field together —

A level field hid in a happy vale:

They plowed it with one plow, and in the spring

Sowed, walking side by side, the fruitful seed.

In harvest, when the glad earth smiles with grain,

Each carried to his home one half the sheaves,

And stored them with much labor in his barns.

Now, Abram had a wife and seven sons ;
But Zimri dwelt alone within his house.

One night, before the sheaves were gathered in,
As Zimri lay upon his lonely bed,
And counted in his mind his little gains,
He thought upon his brother Abram's lot,
And said, "I dwell alone within my house,
But Abram hath a wife and seven sons ;
And yet we share the harvest sheaves alike.
He surely needeth more for life than I:
I will arise, and gird myself, and go
Down to the field, and add to his from mine."

So he arose, and girded up his loins,
And went out softly to the level field.
The moon shone out from dusky bars of clouds,
The trees stood black against the cold blue sky,
The branches waved and whispered in the wind.
So Zimri, guided by the shifting light,
Went down the mountain path, and found the field,
Took from his store of sheaves a generous third,
And bore them gladly to his brother's heap ;
And then went back to sleep and happy dreams.

Now, that same night, as Abram lay in bed,
Thinking upon his blissful state in life,

He thought upon his brother Zimri's lot,
And said, "He dwells within his house alone ;
He goeth forth to toil with few to help ;
He goeth home at night to a cold house,
And hath few other friends but me and mine"
(For these two tilled the happy vale alone) ;
"While I, whom Heaven hath very greatly blessed,
Dwell happy with my wife and seven sons,
Who aid me in my toil and make it light.
This surely is not pleasing unto God ;
I will arise, and gird myself, and go
Out to the field, and borrow from my store,
And add unto my brother Zimri's pile."

So he arose, and girded up his loins,
And went down softly to the level field.
The moon shone out from silver bars of clouds,
The trees stood black against the starry sky,
The dark leaves waved and whispered in the breeze.
So Abram, guided by the doubtful light,
Passed down the mountain path, and found the field.
Took from his store of sheaves a generous third,
And added them unto his brother's heap ;
Then he went back to sleep, and happy dreams.

So the next morning with the early sun
The brothers rose, and went out to their toil.

And when they came to see the heavy sheaves,
Each wondered in his heart to find his heap,
Though he had given a third, was still the same.

Now, the next night went Zimri to the field,
Took from his store of sheaves a generous share
And placed them on his brother Abram's heap,
And then lay down behind his pile to watch.
The moon looked out from bars of silvery cloud,
The cedars stood up black against the sky,
The olive branches whispered in the wind.

Then Abram came down softly from his home,
And, looking to the right and left, went on,
Took from his ample store a generous share,
And laid it on his brother Zimri's pile.
Then Zimri rose, and caught him in his arms,
And wept upon his neck, and kissed his cheek ;
And Abram saw the whole, and could not speak ;
Neither could Zimri. So they walked along
Back to their homes, and thanked their God in prayer
That he had bound them in such loving bands.

(This little poem is not a masterpiece, but a bit of literature whose author is not known ; yet it reveals the harmony of humanity in a way that touches our finest sentiments. It may be looked upon as a valuable trifle, and able to touch the soul.)

Perhaps we should not fail to point out what may be called a common fallacy in literature-teaching; namely, the notion that the moral of a piece of literature should be isolated and stated. The abstract statement of a moral is one thing; the same moral truth in a beautiful concrete setting is quite another thing. To illustrate, the Bible enjoins us in a straightforward, abstract statement, "Thou shalt love thy neighbor as thyself." When, however, the great Teacher wished to reveal the command in a convincing and impressive way, he gave it a concrete setting in that beautiful bit of literature which we call "The Story of the Good Samaritan." When the great Teacher had finished this story, it is worthy of note that he isolated no moral, but only called upon his pupil to answer his own question; and then came the injunction, "Go, and do thou likewise."

The teacher who undertakes to teach the story of the Good Samaritan will miss her purpose if she undertakes to have the moral extracted and stated abstractly, something like the following: "We ought to help our neighbors when they are in need." The loss of effect is easily felt. It is the function of literature to reveal truth in forms that appeal to our emotions, and when a truth so revealed is pulled out of its beautiful setting, it is at once coldly intellectual and uninviting in comparison. It is far more effective to leave the truth in its literary setting and lie in wait for opportunities to apply it in that form. Thus,

when the child is found in a real helping situation of life, let the teacher say, "This is the Good Samaritan." If the child is found revealing selfishness, then let the teacher ask, "Is this the Good Samaritan?" So too, in teaching a poem, say "The Miller of the Dee," let the teacher not lose the powerful literary value by stating the moral abstractly; but rather let her teach her children to see the story revealed in the concrete, so that when a child is found happy in his work, he is at once "The Miller of the Dee."

Principle. — Literature is a powerful and practical moral agent so long as the moral works in its literary setting.

3. THE FORMAL STUDIES

Attention is again called to the fact that in dealing with the formal symbols we are dealing with valuable tools for acquiring and handling experiences—but that they are only tools, with no real value in themselves. A tool is never as important as the work which it is to do, and it must ever be subordinated and determined by the work which called it into being. Too long the formal subjects have been taught as ends in themselves; that is, the child has read, simply that he might read, and he has worked arithmetic simply as arithmetic. We all well know that as a result the world has had occasion to marvel at the inability of the child to "apply what he

learned in school." The fact is, whenever we separate these tools from experience, and teach them as ends in themselves, the child's conception of them will be artificial, and the world will probably have occasion to laugh at the "school learning" that results.

Principle. — The conventional symbols are but tools for handling experience; and in teaching them they should be subordinated to real experience-getting

Language

Language is a medium of communicating experiences. Without experiences to communicate, we should have had no language; and language is at root a mere tool of communication. We shall note later that communication is one of the human instincts, and through it one individual may widen his life with the experience of the race. But given an experience which is to be communicated by one individual to another through language, we have two essential conditions to fulfill before the act can take place; namely, (1) the one who is to receive the communication must have experiences adequate to apperceive the experience offered, and (2) the two individuals must agree on the forms employed.

When an individual assumes to give us his experiences, we want them economically given. No one is pleased with hesitant, straggling speech; and we better understand speech if it is ready and fluent. We train in

language, therefore, to realize fluent communication of experiences. We have just pointed out that there can be no communication unless the speaker and the hearer agree on the language forms employed; for if a given word means one thing to the speaker and another thing to the hearer, misunderstanding results. We also train in language, therefore, in order to conventionalize the forms of language.

Principle. — The aim of language work is to realize fluent communication of experiences through the use of conventional language forms.

We all know that language work, especially composition, is usually dry and formal work to students. We may no doubt find the cause in the bad selection of material. We have all seen the remarkable catalogues of topics that children have been assigned to "write on." Recent authors have assailed the lists without mercy. Now all these bad selections are due to the fact that teachers have mistaken the function of language training. When language training becomes a training in communicating experience, the perfunctory assignment and the perfunctory theme work will cease. There is a wide difference between having something to say and having to say something. The impromptu speech is likely to be bad enough from the platform, but it is about unendurable in school compositions. In order to make sure that the child has something that he wants to say, it is not a bad

plan to allow him to choose his own theme topic ; in any case the teacher should be assured that the child has both motive and means ; for we must have the child feel that he has something to say that is of interest to others, otherwise we are adding to our race of bores. A self-respecting person maintains his silence when he feels that speech would make him a bore.

Principle. — The child should be encouraged to talk or write only upon topics on which he has experiences which he thinks worth communicating to others.

There is another common weakness in theme-writing which needs to be assailed ; namely, the effort is not aimed at any definite person or group. In experience, our speech is directed toward definite individuals, and we try to adapt our language. The same plan should be followed in composition work, if we are to hope for definite and unified results. Firing into the bushes is not likely to bring anything down, and if it does, it is accident. We have all heard of “talking in the air,” but we have all seen writing “in the air.”

Principle. — The composition effort should be directed toward a definite individual or group, and the language adapted.

Taking up more specifically the subject of unity in composition, teachers should realize that there are no external devices which can give us unity of thought, and through it unity of speech. A little introspection can

give us the only genuine clew to the inner harmony that gives us unity of speech. Every person's experience will no doubt justify the statement that our chain of ideas during a paroxysm of joy is anything but like that during a period of sorrow. When we are in a joyful mood, sad thoughts do not come to mind; hence the whole world may seem altogether happy when the inner world is happy. So, too, when we are seized by a paroxysm of grief, nothing but the sad experiences of life come into mind; and since these experiences troop in to the exclusion of others, we are quite too ready to believe that "misfortunes never come alone." If, then, we are to get the desired results in compositions, we cannot ignore the moods; for no one can give us a unified theme when the flow of ideas is out of harmony with the subject. Our best efforts in composition come when "we feel like writing;" and however much we may wish to escape the law, the teacher who seeks unity in compositions must either get the student into the right mood by bringing up a chain of interesting ideas related to the topic, or else trust that the child's mood and the topic will harmonize by choice or by chance. Only when the flow of ideas is in harmony with the topic at hand can we have a deep and vital unity of speech, a unity which John Dewey says "reflective thought may imitate, but only overmastering emotion produce."

All this may be summarized in the law which the

psychologist calls the "law of analogy of feeling"; and since no better guidance could perhaps be given here than the law itself, we may give it the following simple statement.

Principle. — The Law of Analogy of Feeling. — At any given time, only those ideas reappear in consciousness which are in emotional harmony with the mood then present.

Grammar

We have already noted the fact that all communication is based on conventional forms. One does not have to pursue the study of language forms very far before one becomes aware of the need of laws by which we may standardize the forms of language. Thus has arisen the science which we call grammar.

Grammar may be defined as the science of the sentence. In studying grammar, the student dissects the sentence and studies the structure of each element for the purpose of discovering its function. With sufficient experience with the elements and their functions, the student is able to discover laws, or principles, controlling them. At this point language study assumes a scientific aspect; for science is experience reduced to principles. Grammar is a science in the degree that its subject matter is reduced to law, even though the law may be the mere law of usage. Principles serve as standards

for judging things. Thus the student judges the elusive form "It is I" to be correct, by the principle that predicate nouns or pronouns are nominative; that the form "Whom do you see?" is correct, in accordance with the law of objectives. It is therefore evident that the real function of grammar is to standardize the forms of language; and this it does by bringing the forms under law. When the standards are known, communication of experience may be ready and definite; and it is to be noted that the principles of grammar serve not only as standards for judging the individual's own language, but as standards of interpretation of the language of others as well.

Principle. — Grammar is valuable in the degree that it reveals the standard forms of language.

Like all other formal studies, grammar is a tool for manipulating the child's own experience; and the moment it is studied apart from that experience, it loses motive and value to the child. The material for grammar study should therefore be taken primarily from the child's own language experience. The child has been using language ever since he began to communicate; has acquired more or less skill, indeed, in the use of the conventional forms; and in fact he would hardly be permitted to undertake the serious study of grammar until he had acquired the ability to express his thoughts in a fairly successful way. Grammar should begin with

this experience and proceed to unify it by reducing it to law, to science; hence the method of grammar is that popularly known as "inductive."

Principle. — The subject matter of grammar should be selected primarily from the child's own language experience, and that experience is to be unified in the science, grammar.

When the child's language experience has been reduced to law, the teacher's work is far from finished in language. The child may know the correct forms, yet fail to use them in speech. Thus his grammatical errors, that is, those of his language experiences which he has found do not unify with the standards established, are to be routed, while new and unifying experiences are to be repeated and organized into habit. Grammar reveals the standards of language, but it cannot give us at once a perfect speech. Its principles serve to guide in remaking speech already quite firmly fixed by language experience; but experience itself is the only teacher worth the name; and thus it remains for actual experience, repeated over and over in thoughtful ways, to establish the habitual use of the standard forms of grammar. Only by language training that gives persistent attention to definite language errors is correct expression to be fixed.

Principle. — We talk by habit, not by rule; hence it is language training that must establish the habitual use of the standard forms of grammar.

Reading

Reading may be looked upon as the interpretation of language; and so the treatment of language has paved the way to reading. Once more we must note that experience is the essential, and that reading is but a means of handling experience. The efficient primary teacher therefore begins the work in reading with the child's own experience. The child's ideas and thought of his experience are given objective form on the board, and he reads them and loves them because they are his own. This is true whether the approach is through game or through object; for the child must read his own experience into the written forms on the board before he can get meaning from them. This holds true in all reading, and throughout life; and in any teaching of reading, the reading form should be subordinated to the experience which it means to convey. Reading is a means, not an end. The shifting attention of the child must be centered upon the thought; and whether this be done by questioning, or by problem setting and solving, or by blackboard sketching, or by the use of pictures, or by dramatization, the aim is constant; namely, thought-getting and interpretation in terms of the reader's own experience.

Principle. — In teaching reading, the primal aim should be thought-getting and interpretation in terms of the reader's own experience.

When we come to the matter of reading material, we must concede that it is most fortunate that the elementary readers of to-day are being fairly well constructed out of childlike experiences, and handled in child-inviting ways. The languid look, once so common, is beginning to disappear from the reading class, as child life comes into the hitherto lifeless reading forms. We have now to insist that the tools of reading be kept in the background, every new word of the primer being anticipated, with but few new words in any given lesson, in order that experiences may hold the center of the stage. In short, the child must feel that he is reading "to get the story," not that he is reading to command the reading forms. Thus from the very beginning the child must find satisfaction in reading because he feels that the book is talking to him and telling him something that he wants to know.

Principle. — The primer must deal with inviting, childlike experiences, so handled as to keep the thought in the foreground of attention and the reading forms in the background.

The multiplicity of reading methods has led many teachers to wonder what the unit of reading really is. Is the reading unit the letter or the sound or the word or the group or the thought? The teaching of reading once began with the alphabet; but that calamity, let us hope, has lost its sway. It is doubtful if drier bones were ever offered human beings, and that, too, to the

tender gums of six-year-olds. It is interesting to note that Germany has by law forbidden the alphabet method in her schools. The death blow to the alphabet method is found in the fact that no reader recognizes the individual letters of a word in his reading. One who doubts may write or print fifty isolated letters on a page, and mark the time required to read them. Then one may write or print fifty known words in sentences, and note the time required to read them. We need not be astonished if the time required in reading the words is less than that required for the letters. Now if the reader discerned each letter in the word, it would take much longer to read a word than to read a letter; yet no thorough test reveals such a case. Evidently, then, the letter is not the unit of reading.

A little more technical investigation reveals the fact that the word is not the reading unit. As the eye moves from one end of the line to the other in reading across a page, a moving photographic plate reveals that its movement is not continuous, but broken by a series of stops. Thus in reading a newspaper line, the eye may make three, four, five, or more stops, the number depending upon the reader and the reading material. A little further study reveals that the eye recognizes no words when the eye is "on the wing," but that recognition takes place only when the eye is at rest or nearly so. Still further, the stops may occur anywhere in the line; that

is, they may occur in a word or between two words, or two stops may include one or several words. Testing with varied reading materials, we find that if the words do not form connected meaning, the time required for reading and the number of stops is increased. Finally, all reading is liable to error through expected meaning. Thus a reader comes upon the phrase "in the house" so often that he apperceives it as a whole. Now let him come upon the phrase "in the horse," and he is almost certain to anticipate and read it "in the house." All this goes to show that neither the letter nor the word is the reading unit, but that the thought, coming piecemeal, is the building block.

Principle. — The unit of reading is neither the letter nor the word, but the thought.

There are other facts revealed by research which are of value to the teacher of reading. Bringing in the time element, we find that the time required for reading varies for different individuals; and that the difference is essentially due either to the number of eye pauses or to the length of the pauses or to both. A trained reader makes both fewer and shorter stops; hence he reads faster. We can, as a rule, catch the words and the meaning of a line with both fewer and shorter stops than we usually make, but we have simply fallen into the habit of reading slowly. Rapid reading brings the elements of the thought into consciousness in close succession, and so favors

unity of meaning of the parts read. For this reason a rapid reader retains better, other things equal, than a slow reader. In ordinary reading, the retina of an ordinary eye can handle a four-inch line in three pauses of one-hundredth second each; yet no one lives up to this limit in reading. A little practice in forced reading will reveal to any one the possibilities here indicated.

When we come to evaluate the different kinds of reading exercises, silent, oral, concert, etc., perhaps no one will doubt that silent reading is by far the most serviceable reading, for the reason that in actual experience we do relatively little of any other kind. Summarizing facts, therefore, we may lay down the principle: —

Principle. — Rapid silent reading is a valid secondary aim in teaching reading, and this form of reading should command most of the child's time and attention in reading.

Dramatization of Reading Material

The psychologist recognizes the significance of the fact that the brain is the central station of a multitude of neural arcs, one portion of each arc being physiologically known as the sensory nerve, the other as the motor nerve. Every nerve current that flows into the brain from the child's ears or eyes or skin or any sense organ must run out again into his muscles. Inhibition does not invalidate this law. When we have fully recognized this unity of sense and muscle, we can understand what the psy-

chologist means when he says it is a mistake to work with the senses as if they were cut off from bodily movements. This psychological fact is easily recognized in experience. The man who sees another man turn a handspring does not definitely know a handspring until he turns one himself; and if he can never turn one, then he can never have thorough knowledge of the handspring. The person who hears a new song may think he knows the song, but he readily finds that he knows it better after he has sung it for himself. A man may have watched a blacksmith shoe horses for days and months, but he will not have fully realized what horseshoeing is until he has actually shod a horse. Laboratories and work benches, and the manifold school activities, all give in evidence that we believe in self-activity; and all these activities are carried on upon the belief that the doing of things realizes and defines our knowledge of things. When the teacher has a bit of reading material, therefore, that presents a life situation which she would like to make very real to the child, we can understand why she should have him dramatize it.

Principle. — The function of dramatization in school is to realize life experiences.

Writing

Writing is another tool for handling experience. It is one of the time-honored "three R's"; yet in this day of

writing machines, with their corollaries, the duplicating and stamping machines, many educators have already claimed that we can no longer set upon handwriting the high value, nor give it the time and attention, that it was once able to command. Whether or not we accept these claims as founded on sufficient evidence, there is some truth in them, and this has helped some of us to settle for ourselves, at least, the bitter controversies that have shaken penmanship teaching for the past quarter of a century.

Departing a little from our usual procedure, we can perhaps not do better than to state the modern aims of penmanship at this time, and justify as we proceed.

Principle. — The aims in teaching writing are: (1) legibility, (2) individuality, and (3) adapted speed.

Throughout the years of controversy, the one aim which the disinterested investigator of penmanship is ready to say has endured is legibility. What a man writes, whatever may be the result, he actually aims to get down so that some one, at some time or other, may be able to read it. We may, therefore, within reasonable limits, accept the legibility claim as fixed and enduring. Legibility, when stripped of all accessories, is simply oneness of form. If every one using our script made each letter exactly like a given pattern, then any person could read any other person's writing just as well

as his own; and such a degree of familiarity we may reasonably call perfect legibility.

Now comes the business fraternity with the plea that too much legibility, too much similarity of form, actually renders signatures worthless; for the reason that identification is then impossible, and counterfeiting easy. This plea is valid, and we must recognize individuality as one of the ends to be sought in teaching writing.

We have now accepted two aims, legibility and individuality; yet they seem to be almost directly opposed; for legibility is similarity, impersonality of form, while individuality is dissimilarity, personality of form. Our problem is now, therefore, the unification of these opposing aims.

It requires but little experience in penmanship teaching to bring out the fact that individuality is bound to be revealed with anything like liberal training; and that the more liberal the training a hand receives, the greater the individuality likely to be shown. Briefly told, there is no handwriting but that reveals personality in its loops, its lines, its dots, its curves, its run, its slant, its points of maximum pressure; and these characteristics will assert themselves more or less freely if the training is free.

Legibility, too, is bound to come in some degree, since the child must be working in some degree to imitate a model. While there is evidently no danger that the

child will reveal perfect legibility, yet the teacher must believe that individuality must be sought. The procedure must be somewhat as follows. First attention is given to legibility; and the child must have the word form and the letter form as his model. As soon as the child gets the form in mind, the model is put out of sight, and returned only to check too great variation from the standard form. One student reads the writing of another, in order to find illegible writing and give motive for change. Individuality, as already pointed out in detail, comes in; and any of these minor variations from the standard form, which the peculiar personal hand can manifest without destroying a reasonable legibility, is to be permitted. Thus the two aims unify in compromise, and both ends may be reached.

Principle. — The two contrary aims in writing, legibility and individuality, are harmonized by giving first attention to legibility, and then permitting such minor variations from the common form as the peculiar personal hand can manifest without destroying a reasonable legibility.

We can hardly hope to escape the bitterly controverted questions of slant, position of body, position of pen, etc.; and perhaps it should be stated from the very outset that bitterness of controversies almost always comes from personal interest, rather than from honest and disinterested inquiry. With all candor it must be stated that

it is not the duty of the teacher to dictate the slant, nor to fix the position of the child's hand and body as if cast in a plaster mold. If any teacher will follow up the results of such efforts, in a disinterested inquiry, she will find that such efforts have been liberally wasted; for the moment the child begins to use penmanship as a tool, and not as an end, he wears the tool in ways that unmistakably reveal the individuality of the workman. The moment we accept the individuality aim, that moment we must believe that we need all the slants yet devised, and some more. So, too, in working out individuality in writing, we shall be forced to the conclusion that any reasonable position of body or pen which is comfortable and fitting to the individual is to be welcomed. The business college teacher need take no more of this to heart than he pleases, for he is not dealing with the common school, but seeking special ends. The business college may be justified in seeking beautiful and expensive handwriting; but when the common school seeks such ends, it has lost its way.

Principle. — Any writing slant, any position of body or of desk or of pen, which is reasonable and comfortable to the writer, should be valued as means to individuality of handwriting.

The subject of speed in writing has also given us its troubles. This subject is really subsumed under the subject individuality, for normal speed finally resolves

itself into personal elements. In this day of writing machines, rapid handwriting in quantity is not in great demand, and recent research work has shown that every individual has his adapted norm which is partly determined by the amount of writing which he does regularly. In the beginning, all children are slow in writing, for the reason that the motor coördinations are forming. Writing becomes more rapid as the process becomes reflex. Now it happens that in the life of both the individual and the race, the coarser muscles have been and are the first to establish coördinations; the finer movements being gradually established later. This fact must not be lost sight of in teaching the child to write.

Principle. — Motor coördinations in writing begin with the coarser movements, and gradually extend to the finer movements.

The first writing should therefore engage the arm muscles in forming large, coarse letters; the finger movements with pencil and pen coming in after the coarser movements are fairly well established. As the movements become more free and smooth, year after year, the amount of time given to writing should increase; but the time finally comes when the effort to increase the speed causes the writing to deteriorate in quality. Likewise there comes a time when more practice in writing fails to give commensurate returns. It will be found that every individual finally reaches the point, in both

speed and quality, which seems adapted to him. This is the point of diminishing returns. More speed at this point destroys the quality; and while a greater amount of practice may improve the quality, that quality quickly drops back to the adapted norm when the individual's regular drill is stopped. Experience with the individual's writing, as time goes on, is the only means of determining the norm; but none but professional penmen of to-day do enough writing to hold a high quality, even if once reached.

Principle. — Practice in writing should be sufficient to realize the three aims: legibility, individuality, and adapted speed; but it should not be carried beyond the point of diminishing returns.

There is yet another vital question in penmanship teaching. Shall the left-handed child use his right or his left hand in writing? Arm measures reveal the fact that nature gives us two unequal arms. They are unequal at birth, one usually weighing and measuring more than the other. All this is not without significance. If we stop to reflect, we may discern that an individual hardly wants two equally good arms; for the exercise necessary to maintain one good arm, as we now have it, would then be divided between two, with the result that neither would then measure up with our best one now. An arm becomes adapted and efficient through exercise in specific ways. Suppose an individual has two equally

good arms which his usual exercise raises to any given standard of efficiency, say, abstractly, 14 units. Had the exercise been differently divided, one of these arms might have been raised to efficiency 16, and the other correspondingly reduced to 12. The latter case would represent a more efficient arm equipment; for the reason that a 16 arm could realize values in the world that a 14 arm could not reach. To illustrate, one 16 hand on a surgeon could guide a knife in safety where two 14 hands would bungle in a stroke. So, too, a 16 hand on an artist could give a picture that either of two 14 hands could not produce. The fact is, the unequal arms with which the child is born are in keeping with the principle of specialization. Two hands are almost never equally employed in skillful work, and nature seems to have anticipated and assured hand specialization.

The following measures of a two-year-old boy will give some idea of the differences in arm equipment:

Length of humerus	right, 7 inches
Length of humerus	left, $7\frac{1}{4}$ inches
Circumference of humerus and biceps relaxed . . .	right, $6\frac{1}{2}$ inches
Circumference of humerus and biceps relaxed . . .	left, $6\frac{3}{4}$ inches
Length of ulna and hand to 1st knuckle	right, $6\frac{6}{8}$ inches
Length of ulna and hand to 1st knuckle	left, $6\frac{7}{8}$ inches
Forearm circumference (relaxed)	right, $6\frac{1}{2}$ inches
Forearm circumference (relaxed)	left, $6\frac{5}{8}$ inches
Perimeter of hand (buttress)	right, $5\frac{1}{2}$ inches
Perimeter of hand (buttress)	left, $5\frac{5}{8}$ inches

It will be noted that these measures reveal a case of

marked left-handedness; yet the father of the boy was struggling to get the boy to adopt his right hand. However we may plead excuse on the ground of ignorance in such cases, education can hardly forgive a parent or teacher who insists on neglecting the magnificent possibilities of such a left arm, only to develop the meager possibilities of such a comparatively diminutive right arm. Too long already we have followed a blind tradition.

Another aspect of this problem is quite as serious. We are so constituted that the right arm is controlled by the left side of the brain, and the left arm by the right side of the brain. Moreover, the left side of the brain is more highly developed in right-handed persons, and the right side of the brain is more highly developed in left-handed persons. When, therefore, we assume to cause a left-handed child to adopt his right hand, we are calling upon the less developed side of the brain to control his movements. This is squarely away from his highest possibilities. We can also understand why such changes are so hard to establish. It is hardly appropriate to go into further technical details here, but our evidence points unmistakably to the fact that it is a serious mistake to have the left-handed child learn to write with the right hand.

Principle. — The teacher should encourage the left-handed child to write with his left hand.

Unfortunately, parents are often inclined to oppose

the teacher who asks the child to write with his left hand. Tradition is undoubtedly in the way of progress here. The mother is inclined to "see how it looks," and the father may be thinking of right-handed tools. This is all tradition; and when we have freed the race from prejudice against the left hand, we shall not see the "looks," and the demand for left-handed scissors and scythes and hair clippers will create the supply. This accomplished, we shall have done a noble service to humanity.

It should be further noted that the fact that the left hand is at a disadvantage in the slant writing may be taken as further argument for individuality in penmanship. Our effort should not be to fit the child to the writing, but the writing to the child.

Arithmetic

The last in line of the traditional "three R's" is arithmetic. Excepting reading, perhaps, there is no subject in the curriculum whose usefulness is so universally subscribed to as arithmetic, nor one upon which the pruning knife of progressive educators has fallen with more popular consternation. Still, arithmetic, like all the formal studies, is but a tool for handling experience; and it must be determined by that experience.

Arithmetic aims to give the child possession of ready and accurate means of measuring the quantitative side of his experience. The quantitative side of experience

everywhere confronts us, and ever we find need for measuring it,—how much time, how much weight, how much heat, how much expense, how much cost, how much material, indeed, how much and how many on every hand. It is evident that we need ready means, if we are to measure all these intrusive quantities; and our measures must be accurate, if they are to be reliable.

If an individual would realize what a convenient tool arithmetic is, let him try to measure some quantity without the arithmetical symbols. Try to find the cost of 395 acres of land at \$243 an acre, without writing or thinking figures. Or try to think lifetime, without thinking it in years or in some of our time units. The fact is, each process in arithmetic, be it enumeration or addition or multiplication, or fraction or decimal computation, is a tool that every literate man has so thoroughly interwoven in his affairs of life that experience would now seem heavy-footed, and much of it unthinkable, were the tool to be lost.

Principle. — The function of arithmetic is to provide accurate and ready means of measuring the quantitative side of experience.

It ever happens in any field of experience that tools which were once valued as efficient means to ends are now and then relegated to the scrap heap or to the museum, either because the ends for which they served as means have ceased to be valued as they once were, or

because new and more efficient tools have rendered them obsolete. The snuffbox and the curling iron perhaps illustrate the former, and the spinning wheel and the bow and arrow, the latter. So, too, the greatest common divisor, duodecimals, compound interest, partnership, compound proportion, cube root, progressions, are being set aside either for the reason that the ends, imaginary or real, for which they served as means, are not now valued as they once were, or else because we have found better tools for accurately and speedily reaching these ends.

Too long already we have clung to obsolete processes; and the artificial value assigned them has served to give the student misconceptions of experience ahead. When it comes to filling the head of every school child with such specialized subject matter as the apothecaries' table, the surveyor's table, troy weight, the Connecticut rule for partial payments, and so on, we are led to wonder why not teach every child the shoemaker trade, the blacksmith trade, the tailor trade, the carpenter trade.

Principle. — Arithmetical processes which have become obsolete, or which do not enter into common use, should be eliminated from the common school course of study.

It is evident that the first aim in handling the arithmetical tool, or process, should be accuracy. In the world of experience, nothing short of the correct answer will do. No business firm is willing or can afford to pay

for mistakes in figuring. That burden must fall upon the bad mathematician. It must be so in school, if the school is to be true to its mission. The school must recognize that the child's work in arithmetic is either definitely right or definitely wrong, either valid or worthless; hence the teacher who excuses "the little mistake because the child seems to understand the principle," is not true to experience. Accuracy must be constantly insisted upon.

So, too, since arithmetic represents the best experiences of the race in its struggle for more reliable and more rapid means of handling the tremendous problem of quantity in experience, the teacher must insist on economy in time. The Russian shopkeeper figures up his sales on the abacus, and even by laying straws. His methods are fairly accurate, but most of his time is taken up with his wretched figuring processes. His tools for computation are therefore sadly inadequate, for they are highly expensive in the way of consuming his time.

While we need rapid work in arithmetic, this aspect of mathematical training must not be pushed too early, for the student must acquire some dexterity with any tool before he can use it with rapidity. When the rapid drill does come in, it should appear gradually, and the greatest care taken that the student does not lose himself in "nervous worry." Nowhere in school have we a place for worry; for it is worry, and not work, that kills. The "time limit" in arithmetic must not be allowed to make

the student feel its burden ; if so, let the teacher at once rebuke herself for bad judgment.

Principle. — Accuracy, along with reasonable rapidity, should be constantly emphasized in arithmetic.

The essence of arithmetic is found in its principles, definitions, rules ; in short, in the abstractions of arithmetic. It is therefore of the highest importance that the teacher clearly discern how the mind reaches the abstract in arithmetic.

When the child attempts to comprehend the abstract statement 3 plus 2 equals 5, there is really but one way that he can ever really know the truth, and that is through experience. In other words, he must find that 3 marbles and 2 marbles are 5 marbles ; 3 boys and 2 boys are 5 boys ; 3 roses and 2 roses are 5 roses ; 3 splints and 2 splints are 5 splints, etc. Now the teacher might show him that 3 splints and 2 splints are 5 splints, and if he forgot, she could again bring forth the splints ; but we should not forget that if the child always sees 3 plus 2 are 5 in connection with splints, then he will never get the 3 plus 2 are 5 away from the splint idea ; that is, he will never see that 3 plus 2 are 5, in the abstract. Teachers are hardly able to believe that there are hundreds of children who have been kept at the splints so long that they think splints and see splints in connection with every number ; but the psychological laboratory reveals them. If the teacher who finds a child amazingly slow

in adding or subtracting would seek for the cause, let her question him as to what he is thinking, "what he sees;" and she need not be astonished if she finds that he is still thinking and laying and counting splints, still dealing in concretes. No mind can be quick in numbers so long as it is burdened with the concrete; yet no mind can comprehend the abstract unless it derives it from the concrete. Without things to count, for instance, the child could never understand counting, yet many a child is started off in counting without objects. This aspect of our topic will be treated more fully when we come to deal with the imagination.

We may go a step farther and say that these statements hold true for any abstraction. A definition, a principle, or a rule means nothing to a child until he has experience adequate to interpret it. He can get no conception of fractions until he has seen fractions of things; and a rule for finding the area of a triangle means nothing to him until he has created it out of his experience with rectangles. Any generalization must be a generalization of the experience of the mind handling it; otherwise it lacks content.

Principle. — Principles, rules, definitions, — in short, the abstract in arithmetic should summarize the child's own concrete experience; but an unvarying and continued use of the concrete hinders the child in thinking the abstract.

There should be no question as to whether or not the child comprehends a principle or definition or other conception in arithmetic; hence good teaching requires the child to state the generalization in his own words before another form is risked. To illustrate, a child who has been doubling triangles for the purpose of finding a law for deriving the area of triangles, states his conclusion: "If we want to find the area of a triangle, we can first find the area of a parallelogram with the same base and altitude as the triangle has, and then divide it in two." With this statement as a starting point, the teacher may proceed to question the way through to the more symbolic form of the text, if she likes it, "The area of a triangle is equivalent to one half the product of base and altitude."

Principle. — Generalizations in arithmetic should first be stated in the child's own words, but they may afterwards be reduced to a set form meaning the same to the child.

Spelling

The last of the formal studies is spelling; and it should not surprise the teacher when we say that it is also the last for which we have been able to derive anything like a valid specific theory of teaching. Generation after generation left the schoolroom with the notion that it was more or less "disgraceful to be unable to spell any word in the spelling book," yet that book perhaps

contained hundreds of words which they have never used since they closed it. We have been possessed of a large ambition in spelling, so large indeed that the most industrious of us have never arrived. Undaunted perhaps by the fact that the English language has an irrational spelling, innocent of the fact that oral spelling may be quite a different thing from written spelling, and unaware of the fact that the best spelling books yet devised waste by far the larger portion of the time spent upon them, we have struggled faithfully on, only to meet the persistent and bitter criticism that "the schools do not teach the children to spell well." Indeed, the very persistence of this criticism has led some of us to undertake serious investigations of the spelling problem; and while it should be admitted in all candor that there are still aspects of the problem that trouble us, we are able to lay down a few principles to serve as guides in the teaching of spelling.

A little reflection may reveal the fact that the child meets four vocabularies, in his struggle to command the tools for manipulating his experience. The earliest is the aural vocabulary, the ear vocabulary. For several months before the child can talk, he can understand what others say to him. He commands many words through the ear, indeed, and has built up quite an aural vocabulary before he ever speaks the initial "papa" or "mamma." When he does attempt speech, his problem is that of acquiring oral command of those words of his aural list

which he finds immediately useful. It is noteworthy here that the oral vocabulary draws its list from the aural vocabulary, that the two vocabularies are not identical, and that the oral list cannot exceed the aural. As a matter of fact, the oral list never equals the aural list.

When the child enters school, he meets his third, the visual, vocabulary. His problem now is to recognize through the eye the list of words already known to ear and tongue. The important fact to note here is that since the aural and the oral vocabularies have about five or more years the start of the visual vocabulary, the latter must lag far behind the other two for years; though in time it may with some people exceed the oral. Soon the fourth vocabulary, the written, appears. The last to start, the written vocabulary is the most meager list that the child has; and with the possible exception of persons whose lives are spent in reading and writing, the written vocabulary always remains the smallest vocabulary that the individual commands.

The significant fact here is not hard to discern; namely, that the child must know how to spell the words in but one of his four vocabularies, and that is the written. It happens, fortunately, that this vocabulary contains the smallest list of words.

Principle. — The spelling lesson should be based on the child's own written vocabulary.

There are many words in a child's written vocabulary

which he never misspells, and which he could hardly misspell without an effort. It is evidently a waste of his time to study the spelling of such words. Now it happens that the number of words which a child chronically misspells is far less than most teachers are ready to believe. In a study of this problem, conducted by the pedagogy department of the Maryland State Normal School at Baltimore, the written vocabularies of over two hundred students were listed; and there was found no student in any grade from one to ten who misspelled ninety different words. Most students misspelled from twenty to sixty different words; and many cases were found in which a student misspelled a given word more times than there were different words in his misspelled list. For most students, therefore, a spelling lesson of one word a day for sixty days could settle the spelling problem for him to date.

Principle. — The student should direct his spelling study toward those words in his written vocabulary which he commonly misspells.

The words which fall into one child's misspelled list vary widely from those of another; and though the lists frequently have words in common, it has been found that the only definitely effective procedure is to give each child his own specific misspelled list. The usual spelling-book lists are essentially worthless, to say the least; and for the following reasons: —

1. By far the greater number of words commonly found in spelling books is not found in the child's written vocabulary.

2. Of the words found in both spelling book and written vocabulary of the child, by far the greater number is not found in the child's misspelled list.

3. The child studies the spelling book without discrimination; hence wastes most of his time on lists which he should not study, and in the end fails to get his efforts definitely directed toward his misspelled list.

What the child needs is the direction of his study to the 20 to 60 words of his misspelled list, rather than an offering of a book of several thousand words, an amazing portion of which he will never use, many of which he will use, but never misspell, and many omitted which he does misspell. Plainly told, the spelling book contains some values, but they are hopelessly mingled with monstrous and uncompensating wastes.

Principle. — Spelling lists are valuable in the degree that they are individual and specific, and they are approximately worthless in the degree that they are common and general.

It should be frankly stated that the work of deriving a fairly complete list of a child's misspelled words is no small undertaking. Until further research can give us further guidance, the most feasible plan that the spelling teacher can adopt is the plan of seizing

and listing misspelled words wherever found, and directing efforts accordingly. Research will some day give us a theory that relies more on prevention and less on cure.

There is another fact of importance which must work into the theory of spelling teaching. The fact that a child can correctly spell a word orally is not to be taken to mean that he will not misspell it in writing. So, too, the fact that he can correctly spell isolated words in lists is not safe evidence that he will not misspell the same words in composition; that is, when the attention is on the thought rather than on the spelling. Written spelling is largely a matter of motor coördinations; and the group of writing muscles is different from the speaking group. The fact that with most of us the writing of familiar words is mainly a matter of habit, a matter of reflex motor coördinations, accounts for much of our annoying misspelling. Thus if an individual has written "the" so often that he writes it habitually, when he starts to write "that," he may actually write "the" by force of habit; or if he has come to write "his" in a reflex way, he may write "his" for "her," etc. Such errors are therefore due to motor incoördinations, and the child should find and correct such errors for himself. They begin to appear as soon as written spelling becomes automatized, and research has shown that they may account for forty or even fifty per cent of child errors;

and they do commonly account for from fifty to ninety per cent of adult errors in spelling.

Principle. — The real test of spelling ability is the ability to spell as a means, rather than as an end.

We are still in the day of arguments for simplifying spelling; and perhaps it will not be foreign to our purpose to formulate a principle to guide in thinking spelling reform, even though we may not subscribe to the spelling reform movement. We may first see the law in the concrete. If it should be argued that dropping one *n* in the word "planning" would simplify the spelling, we should have to object on the ground that it would make communication less ready and definite; for in such a sentence as "Planning is hard work," the loss of the *n* would render meaning doubtful. So, too, the spelling of the words "to," "too," and "two" might be changed to the one common form "tu" or even "to," but the cues to differentiated meaning would at once be lost, and facility of communication would be lost with the cues to meaning. We are not to forget that spelling is only a tool for handling experience, and that any tool must be shaped by the work which it is to do. No one would contend that writing should be altered to fit a pen, but the pen is fashioned to suit the writing; so, too, we may hardly contend that spelling should be simplified for the sake of the spelling; but the real problem is whether or not the simplification of spelling will increase the fa-

cility of communication. It is true that, other things equal, the simpler the spelling, the more ready the word, the tool; but no words that are spelled differently in order to distinguish their meanings should have their spelling so changed that the words lose their individuality.

Principle. — The question of simplifying spelling must be settled on the ground of increased facility of communication.

CHAPTER III

MOTIVATION

WE have defined the aim of education as the direction of the individual's experience to the end of making him willing and able to realize the values of life. We have seen that the values of life are ends that are good for every one, and that the only cue to those values is experience. We have seen that the race has treasured up its best experiences; and from this greatest of all treasures the school selects those experiences which it is believed will be of most value to the life of the child. The school arranges and classifies the selected experiences in a convenient form which we call the course of study, each class of experiences being called a subject of study. Finally, we have seen the specific aim and value of each of these subjects of study in working out the great aim of education; and we are now ready to take up the next aspect of our problem; namely, how shall we make the child willing to receive the racial experiences which we believe will function in life values?

In educating a child, we are dealing with a will, with its manifold impulses quite as ready to discharge in op-

position to the teacher's will as they are to unify with it. At the very threshold of the teaching act, therefore, the teacher meets the serious problem of influencing child will. The teacher never meets a more important problem; neither is there a more neglected problem than this very problem of securing motives that will lead the child to give his time, his attention, and his efforts willingly to the ends which education sets up; and just in the degree that the will of the child agrees in purpose with the will of the teacher may the purpose of the teacher be realized. What the child does willingly is his own act indeed; but what he does against his will is not his own act, but that of another. The will of the child is the real child; hence no training counts unless it reaches the will, and the more fully it reaches the will, the deeper the self-development.

Principle. — No training is valuable unless it calls forth an emotional willingness; and the depth of the inspiration is a measure of the self-development.

Before a thing can reach the mind, the mind must react, must attend to that thing. At every conscious moment of life, thousands of stimulations through eye, ear, touch, nose, tongue, etc., are beating for admission into consciousness. The number of tactual stimulations alone is legion. Mind cannot respond to all of these stimulations; but at any given moment, attention goes out to that one of the whole multitude of stimuli which

is most promising in significance. The other stimulations fail to command the mind, for the reason that they fail to win in the momentary struggle for attention. The mind reacts, then, in favor of the chosen stimulation, and that one alone is for the moment received. "No reception without reaction," says James. Teachers would be astonished if they knew how commonly their efforts are lost in this way. Some little favorite idea flits into the child's mind, and the teacher loses the child, and the child the teacher.

The stimulations which flow into the brain from the various sense organs are currents of nerve energy. Energy cannot be destroyed, and these nerve currents must eventually issue from the brain in the form of motion. If the visible movement is inhibited, the case is not different, for we still have inner, and perhaps outer, changes. "No impression without correlative expression," says James. Every time the teacher succeeds in winning the child's attention, therefore, she must accept the consequence that what she is saying or doing will eventuate in conduct. This is the very essence of the teaching act; and only the teacher who can command the attention of the child can be teacher in reality.

Principle. — "No reception without reaction; no impression without correlative expression."

Every teacher knows that the thing that fails to interest the child fails to move him; and that the more in-

terest we can lead the child to take in any subject or in any work, the more willingly and energetically the child works. Likewise, any teacher who has had a circus procession pass by while school is in session knows where the interest, and with it the attention, of the school is found in such crises. The threat or the entreaty may haul back the attention for a moment, but at best it quickly flits away the moment the ear is attracted by a strange sound from the street. Whether the attention is voluntary or involuntary, it always goes in the direction of the keenest interest at the time ; and the boy who stays away from the interesting ball game to work in accordance with the orders of his father is acting in the direction of his keenest interest, whether that interest be in work or in escaping condemnation and woe.

Principle. — The sole motive of mind is interest ; and attention always chooses the most interesting object.

What, now, is interest? We may again find our answer in experience. A man traveling along a country road is caught by a downpour of rain. We may assume, with all reason, that his most pressing purpose is now to find shelter from the storm. He casts his eyes behind him, and in his distress he sees a rabbit run across the road ; but that does not now interest him ; he sees a crow alight on a post ; but that too fails to interest him ; lastly he sees in the distance a covered carriage approaching, and his whole heart goes out to the carriage, for the

reason that it may serve him as means of realizing his most dominant purpose at the present time. Briefly told, the covered carriage is most interesting to the man because it is useful, indeed, the most useful object in sight, as means of realizing a dominant end.

Again, a zoölogist is shipwrecked and finds himself in grave dangers of the deep. His most pressing purpose, we may say, is now self-preservation. Clinging almost hopelessly to the floating wreck, the man casts his eyes upward toward heaven. He sees a seagull swoop by; yet this scientist, who has spent his life in bird study, is not now interested in the seagull; he sees a flying fish flit across the waves, but this too is not interesting; finally he sees a lifeboat bearing down upon him, and immediately his feeling to the very depth of his soul goes out toward the lifeboat. Nothing in the world is now so interesting to him, for the reason that it is the only object in the world that promises to realize for him his most dominant purpose.

Once more, a shiftless schoolboy refuses to study his arithmetic lesson. The schoolmaster cautions, but the boy does not heed. Eventually the boy finds himself in an adjoining room, and confronted by an enraged schoolmaster, with the rawhide pending. At that moment the boy's most pressing purpose is perhaps to escape punishment; and though he has already ignored caution, refused to study, now he pleads for the privilege

of studying the lesson. The lesson is now keenly interesting to that shiftless boy, solely for the reason that it promises to serve him a very useful purpose.

Principle. — Interest is a feeling of usefulness of objects as means of realizing a present purpose.

Strictly speaking, purpose is always present, though its end may be future. We may even say that the end is always future; for the reason that the moment an end is present, it is realized; and hence no longer a motive.

Here we must erect a danger signal. If we give to the term “usefulness” the mean and impoverished significance that some philosophers have ascribed to it, we lose our way; but if we give it the legitimate and practical meaning, serviceableness as means to ends, we then have a practical term for pedagogy, rather than an imported term to express a narrow theory. If there is anything in the world that is useless, then what can its existence mean? We must believe that God has made nothing useless, and that man cannot possibly be interested in useless creations. The plain and unassuming fact is, music and fine art and literature and everything that God or man has created has been created for some use; and things are cherished because they satisfy some purpose. Music is useful, highly useful, in that it gives us the very happy and practical end, internal harmony. Art is useful, very useful, in that it satisfies our longing

for harmony in the objective world; and literature is useful, and every bit of beauty which it can reveal is the very essence of usefulness, in that it makes for harmony of humanity. Harmony within the soul, harmony without the soul, and harmony of all souls are certainly the most satisfying ends that the human mind can conceive; and music, fine art, and literature are useful in the degree that they serve as means to these ends. It is in this sense that the term "usefulness" is employed in this work.

We are thus to believe that the immediate basis of all interest is use, and we may now inquire what the ultimate basis of interest is; that is, what the individual has use for. Again we must call in experience to teach us.

Perhaps the most interesting thing in the world to a rat dog is a rat; for the obvious reason that the rat satisfies one of the most dominant instincts of the rat dog. Give such a dog a glimpse of a rat, and he will be spellbound with interest. Pull the dog away, and he will struggle to return, and neither tempting food nor sound thumps will abate his zeal; and the sparkling eye, the "pricked" ears, and the emotional tremble all testify to the keenness of the interest which the rat dog finds in the rat. If the teacher could command such interest in teaching arithmetic, we can only surmise the result.

Again, one of the most interesting experiences that

a race horse can meet is racing; for the reason that he is "bred and born" to race. A cat cares nothing for racing, for she is without the racing instinct. It is the mouse which interests the cat; and the race horse, in turn, is not moved by the mouse. So, too, the game cock and the bulldog are keenly interested in combat; the mother of any species is keenly interested in her young; the waterfowl, in water; the robin, in the worm; and every living thing, indeed, finds its interests religiously secured and bounded by its instincts. The individual may make the measures, but nature has set the bounds.

Let a person try to explain the fact that one child likes green peas and another refuses them, and he will quickly be driven back to the conclusion that the cause lies somewhere in the native constitution. One man is attracted by cooked turnip, while another avoids such a dish; and each follows his inborn tendencies. If an instinct has been implanted in the nervous mechanism of an individual of any species, that individual will find interest in anything that promises to satisfy that instinct. Every impulse is instinctive at root, and without impulse there could be neither knowledge nor feeling, hence no interest. Ultimately, therefore, a thing is useful to an individual in the degree that it promises satisfaction to impulse; and without impulse there could be nothing useful, since no will. It thus happens that while an

individual is interested in anything that is useful to him, only those things are useful to him which satisfy his instincts.

Principle. — The immediate basis of all interest is use; the ultimate basis is instinct.

Since the instinct is such a vital factor in education, we need to know what the human instincts are. So far as known, the most important human instincts, viewed from the educational standpoint, are as follows: —

List of Human Instincts

- | | |
|--------------------|-----------------------|
| 1. Communication | 17. Sympathy |
| 2. Expression | 18. Sociability |
| 3. Experimentation | 19. Jealousy |
| 4. Exploration | 20. Envy |
| 5. Manipulation | 21. Pugnacity |
| 6. Construction | 22. Emulation |
| 7. Ownership | 23. Physical Activity |
| 8. Curiosity | 24. Mental Activity |
| 9. Play | 25. Independence |
| 10. Rivalry | 26. Reverence |
| 11. Secretiveness | 27. Shyness |
| 12. Imitation | 28. Collecting |
| 13. Anger | 29. Hunting |
| 14. Fear | 30. Hunger and Thirst |
| 15. Vanity | 31. Cleanliness |
| 16. Affection | 32. Modesty |

To this list of instincts, already long, may be added a string of reflexes, whose values are less evident in teaching; namely,—

Human Reflexes

- | | |
|----------------------------|-----------------------------|
| 1. Sucking | 12. Trembling in fear and |
| 2. Creeping | rage |
| 3. Smiling | 13. Gesturing |
| 4. Grasping | 14. Standing erect in con- |
| 5. Crying | fidence |
| 6. Biting | 15. Clenching fist in anger |
| 7. Carrying objects to | 16. Walking |
| mouth | 17. Climbing |
| 8. Checking breath in lis- | 18. Chewing |
| tening | 19. Lying down or sitting |
| 9. Frowning | down to rest |
| 10. Pouting | 20. Swallowing |
| 11. Crouching in shame | 21. Coughing, etc. |

We are often told that man has more instincts than any other animal; and since his nervous mechanism is most complex, we can readily understand how the nerve currents can give us a rich supply of impulses. It should be understood that there is no common agreement among psychologists as to the list of human instincts. Most psychologists are ready to believe that the list is larger than we yet know; and scarcely do we have an extensive research in this field that does not lay claim to having

isolated instincts hitherto unnamed. It should also be understood that the instincts that are already recognized overlap one another in many ways, and that for pedagogical purposes, at least, this interrelation and overlapping is not objectionable.

The importance of the instincts in the motivating process is so great that the teacher must be quick to discern them in experience; hence we shall treat them concretely.

1. *Communication.* — Every normal child loves to talk. Few people have any conception of the strength of the talking impulse, though all of us have been bored by it at times. In the State Normal School at Baltimore, children have been tested in the effort to measure the communicating instinct, so annoying at times to teachers; and the following experiment, directed toward the questioning impulse of childhood, will illustrate the strength of the communicating instinct in one of its aspects.

Three six-year-old children were taken into the testing room, where two large live lobsters had been provided. The children were given permission to look at the lobsters for ten minutes, but they were instructed not to speak until permission was given to ask all the questions they wished. At the end of the given time, the children were separated, one at a time remaining in the room with the lobsters, and permission given to ask any and

all questions at will. Questions were answered as rapidly as possible. Results: The first child, a girl that was designated "a dull child" by her teacher, asked ten questions in two minutes. The second, a boy designated "ordinary" by his teacher, asked eighteen questions in four minutes. The third, a "very bright girl," was a veritable little gattling gun of questions, for she peppered the experimenter with forty-eight questions in ten minutes.

Any teacher of experience will readily concede that this rapid fire of questions was prompted by keen interest. There were at least two instincts at the root of the interest; namely, curiosity, which prompted the desire to know, and communication, which here served as means of satisfying the curiosity, as well as a happy end in itself; that is, the interplay of ideas, or communication.

Now and then a child enters school with little or no inclination to talk. Such a child may sit for days without speaking a word, and perhaps the teacher cannot even induce him to tell her his name. Such cases never mean that the communicative instinct is not there; but they only point to the necessity of finding a motive. If, now, the superior insight of the teacher will lay hold of something, of anything, that will stir the child's interest; if she will increase that interest even to the exploding point, she may be assured that when the child has something that he wants to say, something

that he feels he must say, he will perforce break his silence and fall a ready victim to the teacher's skill in motivation.

2. *Expression*. — We have already accepted James's principle, "No impression without correlative expression." This, as we have seen, is only another way of saying that every nerve current that flows into the brain through ear or eye or minutest cell finds a better or worse pre-formed pathway out to the muscles. Indeed, unless these incoming currents result ultimately in better adjustment of the individual to his environment, we should be at a loss to understand their meaning. The moment a nerve current reaches a muscle, that moment the muscle responds in the only way that it can, and we forthwith have motion. If the movement is of the vaso-motor muscles, the facial blood supply will be affected, and paling or blushing expresses the fact; if the nerve current reaches the heart, then the heart beat and the pulse give expression; and if a surly affront sets loose a nerve current that ends in an emotional overflow into the muscles of the arm and back, an angry blow may give expression.

If the teacher would get a clear view of the expressive instinct in its simple form, she may find a five-year-old child just coming into the scribbling habit. She may seat herself with the child at a writing table, and tell the child that she is about to write a letter to the child's ab-

sent mother or father or grandmother; then hand the child a paper and pencil and tell him that he too may write a letter to the absent one that he loves. When both letters are finished, the teacher may compare her letter with that of the child. The difference will be found to be chiefly a difference of freedom of expression. The child's is the more free. It is so free, indeed, that the teacher cannot read it, while the teacher's expression is bound down by conventional forms which the child does not understand. Now let the child give voice to his letter, and the conventional forms of speech reveal to the teacher what she has not hitherto been able to understand, yet which the child understood, and which in his simple and primitive way he had expressed. Here, in the childish scribbling, is the expressive instinct at work in its own primitive way, and simply putting out into the world ideas which are genuine indeed, but which are lost to the world through lack of conventional symbols. This simple objectification of the inner being is the beginning of better things; and without this expressive instinct there could be no education.

3. *Experimentation.* — Experimenting means doing something with things to see what will happen. The mere statement of what experimentation is, is sufficient to touch off the memory of manifold childish experiments that serve to reveal the universality of such traits in children. Indeed, it would seem that the most annoying

pranks of childhood are the outcropping of this racial habit; yet it is an extremely hopeful instinct. The habits of the scientist are rooted in it, and it is one of the most vital and enduring cues to progress. Thus a child who has been cautioned to let the stove alone must perforce experiment with that forbidden thing at the first opportunity, to see what will happen. Sorely in need of experience, the child lays hands on the stove, gets the experience, and is at once wiser and better adjusted to his environment in at least two ways; namely, (1) he knows the stove better, and (2) he understands and is more ready to receive admonition.

When man finds himself short of experience in any given field, experimentation is an instinctive way of struggling to produce that experience. The common use of the terms "apprenticeship," "laboratory," and "induction," in the fields of education, points out the widespread play of the experimenting instinct.

4. *Exploration.* — The exploring instinct is the native tendency to widen acquaintance. It is natural that people keep on going so long as healthy and full of energy; and when this impulse is lacking, the physical condition has become pathological. We can all understand the situation of the mother who goes visiting with her healthy children. It is not natural that the children "sit down" and be "good children." The case is far more hopeful for the child who must ransack the cellar, the pantry, the

barn, the housetop, and every nook of the homestead. Ask the child why he thus ransacks the place, and he can give no better reason than that he is "just seein'." It is not different with a man who finds himself in a new city, and must "stroll out to see the town"; and when one town has been fully explored and there is "nothing new to see," he complains of ennui, and seeks relief in another town.

Like all other instincts, exploration brings its troubles. One of the most trying and persistent school trials is truancy, and truancy is commonly rooted in the exploring instinct. The boy who fakes school because he is "tired of school" may be just a miniature traveler, with a spirit sufficiently daring to "stroll out to see the town" or the circus or the fishing pond. The rod is a poor remedy for such truants, for the truancy is an indication that the truant is filled with more energy than the school is utilizing, and the child seeks ways of spending the overplus. When the walls of our schoolrooms have been widened out to include the farm and the factory, the railroad and the fishing pond, the excursion will serve to relieve the hitherto pent-up stress of the exploring instinct, and this racial habit will become our ally, rather than our enemy.

5. *Manipulation.* — The manipulating instinct is the native tendency to handle things. The moment a child sees a thing, we expect him to try to get hold of it. The hand differentiates man from the animals below him, and

nature has not forgotten to give us an instinctive tendency to magnify this difference by usage. Not all instincts are ripe at birth. Some of them, notably sex affection and sex jealousy, do not mature even till adolescence; yet the grasping impulse, a branch of the manipulating instinct, is ready-made at birth. The child will grasp an object in contact with its palm the moment its breathing is fully established. The manipulating instinct is one of the racial habits that persist through life. The carpenter and the blacksmith find it necessary to display the sign "Hands off" above their work benches. Administrative boards of zoölogical parks and of art galleries require visitors to check their canes and umbrellas before they admit them. These are precautionary measures aimed at protection from the manipulating instinct; and without them, men of gray hairs and women of polite form and children of inexperience would be poking the animals, and "feeling" the pictures with their canes and umbrellas. The school child, then, instinctively handles things; and the use of the pencil and of the scissors, paper folding, measuring, painting, and handwork in general are naturally interesting to a child. It is, therefore, easy for the teacher to over-employ handwork, and to allow it to degenerate into mere "busy work."

Manual training, as the name indicates, is rooted in the manipulating instinct. While we must admit that the

mere hand-training value of manual training has received relatively too much emphasis, there is no question that the world's progress has always been conditioned by the human hand. It is a valuable mind that can conceive ideas in advance of its time; but the mind that has made the hand a dexterous instrument for working out its conceptions and giving them real existence in the world is the mind that thinks in definite, tangible terms. Here lies the highest value of manual training; and a mind that can think rectangle or circle or square will think and know these forms better after it has coördinated the hand movements in actually making them.

Principle. — The aim of manual training is (1) to develop habits of thinking in definite, practical, tangible terms of doing; and (2) to give the mind control of the hand as a vital instrument for realizing its purposes.

6. *Construction.* — The constructive instinct may be characterized as the native tendency to form larger wholes out of smaller wholes or parts. A child builds a house with his blocks, yet cares so little for the house when it is done, perhaps, that he finds more pleasure in kicking it down and then rebuilding. It should be noted that the destructive instinct is the constructive instinct acting negatively; and that destruction may become so interesting to an unguarded mind that it acts hark back to vandalism. A boy may actually delight in killing birds, breaking windows, "smashing" watermelon patches,

burning buildings, torturing animals, and so on; and the conduct of man is such at times that we can explain it only through the constructive-destructive impulse. On one extreme we have the doings of the "black hand"; on the other, the childish pulling to pieces of Christmas toys. War is rooted in this, among other instincts; so is the Brooklyn Bridge, and the tunnels beneath the Hudson.

Combined with the manipulating instinct, the constructive instinct is doubly potent. Nearly all children love carpenter's tools; and they readily spend hours in hammering and sawing and making. Fortunate is the child that has his little box of tools and a bench where he can make his toys; indeed, where he can realize his ideas whether good or worthless.

The mental side of construction, which we may call pure construction, or constructive imagination, if we prefer, is the most vital key to progress. Before the Brooklyn Bridge existed in reality, it had to be constructed in idea; and an idea antedates every invention. The human mind loves to manipulate its own experiences, and with these experiences as elemental wholes or parts, it works over the outer world in its own secret laboratory, and strives to remake that world to suit its own purposes.

7. *Ownership*. — The tendency to claim the exclusive right to a given bit of property is instinctive. A child early manifests the disposition to control the use of his toys, and to reveal jealous and even pugnacious impulses

when thwarted in that control. This disposition deepens and perhaps refines with age. Property rights are rooted in this instinct, and its powerful and impulsive nature is seen in the modern strike, in the infamous graft, and in the common, all-absorbing race for wealth. When man finds things useful to him, he is at once interested in those things, as we have seen; and hence he readily wills to own them. Not even friendship and love escape this law. The individual who is in love instinctively seeks to own the object of that love, and marriage finds its double root in the instincts of ownership and affection. Thus the home, rooted as it is in two of the most powerful human instincts, deeply moves us all as one of the most inviolable institutions of man. A man will shoulder his gun and go out and fight and even die, if need be, for his home; and more and more the world is coming to the belief that the home-wrecker is one of the lowest and meanest villains that the human mind can think. The time-worn "Home, sweet home" has never grown stale, for the reason that it touches two of the most vital chords in the human breast.

Since the ownership instinct is such a deep-seated and versatile impulse, it is one of the most potent motives known to psychology. The most natively interesting thing in the world to man is his own personal self, his own free will; and for the reason that every purpose and every impulse is a purpose and an impulse toward fur-

therance of self. The self feels that its purposes and its impulses are its own means of self-advancement; that they are indeed its own free will; and free will must be recognized as the ultimate end, the last trench from which man will not retreat, but die rather than yield it up to become the property of others. Since man so thoroughly wills to own his own will, his own self, he also thoroughly wills to own whatever he believes furthers his own freedom, his own self. We can therefore understand matrimony, and why man will fight and die for his loved ones; for he is struggling to realize his own free will, and there is no higher motive. Religion itself is grounded in self-emancipation; and education and government aim at the same end. The most powerful preacher, the most powerful teacher, and the most powerful lawgiver are men who can make people see and understand how religion, education, and government emancipate the self; and religion itself is the most harrowing problem known to a man who cannot think himself free from the grave, and free in all eternity. So, too, the happiest of all thoughts is the clearly established conclusion that we shall be free in eternity.

Such a powerful motive as the ownership impulse must have its mighty dangers; and we accordingly find one of the ugliest sins, namely theft, rooted in this instinct. The individual wills to own property that promises to be useful to him; and if this will cannot be otherwise

realized, the individual who has not solved the problem of self-emancipation may realize the ownership of property through theft. Theft is a problem for the pathological psychologist. It is easy to understand how a sane man can afford to lose his horse, but impossible to think that a sane man can believe that he can afford to be the thief. A hundred dollars may replace the horse; but how can we understand a man who gives his ideal self, his own image of God and the noblest thing he owns or can own, — his own free will, — for a poor dumb beast? The price is immeasurably dear, and nothing less than a touch of mania can explain the act. The world is rapidly coming over to the conception that all crime is the outgrowth of perverted thinking, perverted mind, insanity. At the root of every crime lies an instinct; and the ownership impulse often drives man to wrongs.

8. *Curiosity*. — Curiosity may be briefly defined as the craving after universal life. We all have the feeling that outside of our own immediate life, in the world about us, there is a large and ever unfolding life that is akin to our own. We instinctively feel that everything, indeed, is a manifestation of the same creative hand that gave us life; and that we must know this wide and universal life about us, if we are to understand our own. It is the craving to know this universal life which we call curiosity; and this very instinct is the rootstock of religion.

The child who sees a strange animal craves to know the

life of the animal ; and he showers his questions upon any one whom he thinks can satisfy him. He strives instinctively with every sense he has to get into the life of the animal. Just why he would know the animal, the child cannot tell ; but the knowledge is useful to him in satisfying his craving to know the animal. So, too, in the crowd that suddenly gathers on the street, there is something that the passerby is curious to know, and he must stop and investigate ; and when he finds that it is only the familiar street fakir, he is next curious to know just what jewelry he is offering this time, and who are his victims. It is often remarkable how we are interested in every move of our neighbor ; and yet not in the familiar doings, but in those that promise something new. We cannot allow him to make a move that we do not understand. Thus curiosity has come to have a bad meaning ; yet it has a respectable meaning as well.

The curious instinct is one of the teacher's faithful allies. Every new move and every new thing seems to challenge the attention of the children, for they would understand. Yet a little closer study of this subject shows us that it is not really the absolutely new thing, neither the absolutely old, that attracts ; for the mind must have some experience related to the new thing, before that thing can win the attention. Thus the scientist is attracted by many things in plants or in animals, which other people fail to see. Similarly, a thing ab-

solutely familiar to the mind, both in fact and in purpose, would be handled reflexly, if at all, and hence fail to win in the struggle for attention. Thus a man passes a lamp post on the street corner. Day after day he passes it, until at length it so fails to attract his attention that he seemingly forgets that it is there. Now let the lamp post receive a new coat of paint, and the man's attention is drawn to it at once. It is the new coat on the old lamp post, the novel in the old, that challenges the man's curiosity, and thus wins the attention.

On the other hand, suppose a man passes a cripple frequently on the street. Time after time he passes him, till at length he fails to note the poor cripple, and the passing becomes subconscious. Now let that man in his travels suddenly come upon that same poor cripple on the streets of Paris, and at once he sees him, indeed loves him, perhaps, for the reason that it is a familiar face in a new and unexpected place. The new in the old calls forth the curious instinct, and interest and attention result. So, too, the joke, indeed all wit, is interesting because it reveals new meaning, new life, in familiar terms.

Principle. — The old in the new experience is interesting, for the reason that the strange mingling challenges curiosity.

9. *Play.* — Play may be defined as activity in its freedom; and since the most interesting thing known to mind is its own freedom, every mind instinctively loves

play. Play may therefore become one of the most captivating as well as one of the most efficient tools that the teacher can command. It may also become, and often does become, one of the most effeminate instruments known to the schoolroom. Such a tool, at once powerful and dangerous, needs a full treatment in pedagogy; hence a special chapter is devoted to it later on in this work, and a further treatment is not attempted here.

10. *Rivalry*.—Life itself is a mighty struggle for existence; and the creature that ceases to strive, soon ceases to exist. Since two or more individuals may strive for the same end, rivalry varying from a healthy competition to a bitter life and death struggle may ensue. Rivalry is not an unworthy impulse, not an ugly and selfish motive. The teacher should rather view it as a means of stirring the child to his deepest and noblest efforts to win. The athlete tells us that at no time in the foot race is he stirred to such efforts as at the moment he hears the breath of another at his ear, about to pass him; yet no one will criticize the motive. The same feeling moves the dumb brute. When the great Dan Patch appears on the race course for his “warming up” miles, he appears alone; but when he takes the word for the final mile, a “running mate” is with him; and now and then when the driver would stir the horse to his best efforts, the running mate is pushed alongside, and the mighty horse reels off a quarter in twenty-eight seconds,

with a mile perhaps in one minute and fifty-five seconds. Now let the same Dan Patch pace his mile "without company," and try as hard as he may, he drops back to a mile in two minutes or slower.

Rivalry is preëminently a masculine motive; yet with either sex the teacher should believe that it may be a valuable motive. There is no live schoolroom that is not moved by it; but the moment it embitters to envy, the school purpose is likely to be defeated. It is a healthy rivalry that we want; a rivalry that stirs the child to his best efforts, yet wills no evil to competitors. Such rivalry is a value of life, for it is good for every one. We need to bring forth the best there is in the individual, and rivalry is one of our means. The boy who solves twenty problems in algebra may solve yet another five in order to outdo his fellow, and still there need be no wrong to any one; but if the strife takes on a morbid, selfish aspect, cheating is likely to appear; and this very cheating is the evil which the teacher must be on the lookout to detect, when keen rivalry is being played as motive.

11. *Secretiveness.* — One who has not investigated the instinctive reactions of the human being may be astonished at the claim that we all have instinctive tendencies to hide from others much that we know, much that we feel, and much that we will and do. There are some things that are so intensely personal that the individual refuses to disclose them to any living being;

and others that he is ready to disclose to the trusted few, with the caution "don't tell any one." Thus the middle-aged woman hides her age, though she could hardly give a sensible reason for so doing. A young girl does not care to hide her age, neither does the aged woman. At eighteen, the young girl boasts how old she feels, but when she is forty she is as "young as ever"; and when she is eighty she finds pleasure in advertising her years. So, too, a man who has slipped and landed on the sidewalk first looks eagerly about him to see if any eye has caught him, then he pulls himself up, brushes off, and unwillingly admits the fact if accused. We all keep up a running secret society.

The secretive instinct is often directly opposed to the expressive instinct. The human mind often becomes a battle ground for these two opposing impulses. We all know how "hard it is to keep a secret;" and the fact that we do usually tell our secrets in time indicates that secretiveness is the weaker of the two instincts. On the other hand we all know how interesting a secret may be, and it is often for no other reason than that it satisfies the secretive instinct. Many a child has been won over by a teacher who trusted him with a secret; and the fact that a boy may feel that he is the sole class custodian of the way to work a given problem may give him a keen delight in the problem, and a bit of motivating and valuable conceit in his mathematical ability.

12. *Imitation.* — The imitative impulse is one which every one has noted. We are all what we are largely through the workings of the imitative instinct. We all really live much alike, sleep much alike, eat much alike, marry much alike, talk much alike, think much alike, and so on. Even idiots confined in institutions imitate one another; and the most polished courtier is not at all immune to imitating some little attractive trick of hand or head or tongue of the rudest clown. Psychological investigation reveals the fact that every idea is attended by an impulse that is bound to discharge it unless inhibited. We are all of us frequent victims of non-inhibitions that reflect the doings of others. Thus the boy who has been to the circus is giving out evidence on every hand. So, too, the serious farm hand, returning from the county fair, must race his plodding driver. Perhaps there is no child who does not reveal in manifold ways some one or more of the personal traits of his teacher. The man teacher who parts his hair in peculiar style need not be astonished to find many heads of the schoolroom instinctively taking on the same style; and the woman teacher who must by nature limp in her walk need not be surprised soon to find forty limping gaits.

We never know in advance what little quip will appeal to personal idiosyncrasy, and hence with or without alteration become a possession of the nervous mechanism; but fortunate, very fortunate is the teacher if the leaders

of her classes and of the school are individuals whose personal traits are quite as worthy of imitation as her own. There is no question but that teachers do not count enough on the influence from this source, and hence on the one hand they fail to multiply their own influence by affixing the positive coefficients, and on the other hand they allow the negative values to be included from less happy sources. The schoolroom can never realize its fullest possibilities in life values, until the worthy personal traits revealed there are brought out into the foreground, and the unworthy traits buried in a deep but perhaps silent condemnation.

The imitative impulse manifests itself as early as the second half year of life, and rapidly grows in strength. It is stronger in childhood than at any subsequent period of life; hence it is of the highest importance that the primary school be rich in influences worthy of imitation. Pure diction, pure morals, self-respect, clean habits, ready tolerance, and a full willingness to be of service to others are all of the highest value there.

13. *Anger.* — Anger is one of the emotions. Every emotion is caused by an impediment to the free flow of conscious processes. Nerve currents are thus dammed up and overflow into the muscles through pathways preformed and fixed by heredity; hence every emotion is instinctive. When the individual meets a “snub,” his tranquillity of mind is disturbed, his thinking is checked

for a moment and is thrown back upon itself. The dammed-up brain currents at once begin to rise and soon overflow through preformed pathways, and we see the fist instinctively clenched, the brows dropped, the jaws set, the lips drawn back, perhaps enough to show the teeth as of old, the heartbeat is quickened, the breathing deepened, and the emotion is on.

While it may not be at once evident just what values those angry bodily reactions have for civilized man, we can readily see what they meant to primitive man, whose right was might; yet inspection reveals that the emotion of anger arises only in unusual situations, that seem to call for all the reserve force of the organism in order to meet them. The function of the emotion is therefore evident, for the emotional overflow stirs up the deep-seated instinctive reservoirs of force, and concentrates all the available energy of the organism on one line of reaction. The completely angered man knows but one reaction, and that is resentment; and his resentment easily savors of ancestral days.

Principle. — The function of emotion is to concentrate the forces of the whole organism on one line of reaction.

Anger, therefore, has its value for education. When some unusual situation arises and demands more than ordinary efforts, the emotion is our concentrating agent. When the boy meets a problem in arithmetic which tries him through and through, he needs to feel a kind of inner

wrath at himself that will not allow him to be downed. When the rights of a girl are trampled on, she needs to be stirred by a feeling of righteous indignation that will refuse to accept the wrong.

The emotions, as well as the intellect and the will, need training. The man who angers when no unusual effort is called for, and who froths and fumes about little of consequence, is a spendthrift of energy. The human being in the toils of an emotion is a high-pressure engine; and since feeling may be in control, the acts may be vicious and blind, as angry deeds often show. It is the anger that refuses to see the values of life trampled on, that we should nourish in the rising generation. We need anger that will stir at the thoughts of greed and graft and life for self alone; but we want anger that readily gives place to smiles when impure motives have been put to flight.

14. *Fear*. — Fear is another of the emotions, and it plays a vital rôle in every life. In the great struggles for existence, as well as for purposes, which characterize all human life, any individual may meet opposition which is too mighty for him, even though emotion has called up the reserve forces. Venture under such conditions may be foolhardy, and so nature has implanted within us the emotion of fear. It is the function of fear to hold back the individual from an over-aggressive life. Thus a man who would steal is held back by the fear of penalties;

the man who would lie, by the fear of discovery; the man who would kill, by the fear of the hangman's noose. Better still, the self-emancipated individual will not steal, for he fears self-condemnation; he will not stoop to lust, for he both loves and dreads to lose his own ideal self; and the religious adherent will not break the commandments, for he fears a jealous God.

Every teacher knows what a wholesome fear means in the schoolroom. Indeed, it does not require a very deep study of human conduct to reveal the fact that there are times in every life when fear is the ultimate hope. We are all strong at times, and we are all weak at times; and in our weaker moments we are only human when we drop below our life standard. In such moments, fear, and not always the most worthy fear, is the tonic that bolsters us up; and nature was not against us when we were given the instinct of fear.

15. *Vanity*. — Every human being loves to have others feel that he is of value in the world; and we all feel and must continually be repressing the innate tendency to show off to the best advantage. A two-year-old child bumps his head on the floor, finds that it pleases on-lookers, and so he repeats to the limit of silliness. So, too, the teacher struggles to have her school appear to the best advantage when the visitor is at hand; and the gray-haired man, no longer able to show as he once did in the world, must sit by the hour and relate the marvelous

doings of his younger days. The hopeful mother, when callers are at hand, brings forth her daughter to "speak her piece" or to "sing a little"; and the father calls on the son to "show the folks how strong you are." All this comes, too, when there is but a minimum of entertainment in it, and a maximum of display. Men seldom minimize the size of the fish they catch or the size of their chests or the value of their automobiles; and women are so vain in dress that it would be at once ridiculous to specify. Yes, we are all vain. Vanity is instinctive; and one of the most despairing of thoughts is the belief that we are not appreciated.

We are not to believe that vanity is of no avail. The fact is, we need to bring forward every bit of superiority we can, and keep it in the foreground where it can feed the imitative instinct. This would be a wretched world if we brought forth our inferiorities and held them up for imitation. While it is true that our vanity often shows us up to disadvantage, the lack is in judgment. The conceited schoolboy is not to be reproved for his impulse to display, but rather for displaying something unworthy of display. When he has accomplished a superior piece of work, display is in order; and we need to bring the superior work forward where it can sing its own praise. It is the poor judgment, which offers trifles for attractions, which should meet the heel of criticism. Thus in the vanity instinct, as in all instincts, we may discern natural tendencies to

the highest good ; and before we would attempt to kill off an instinct, we should do well to count the cost.

16-18. *Love, Sympathy, Sociability.* — Teachers may be credited with more or less familiarity with the motivating power of love. We have all seen the boy strain himself for good behavior in order to please a teacher whom he loved ; and we have seen the girl exert herself to the limit because she could not disappoint her favorite teacher. The love instinct is, perhaps, stronger in woman than in man ; yet there is no question but that, with either boy or girl, affection is a strong element in the teacher's influence. While teachers often go wide of the mark in the effort to win the affections of their students, yet we must not fail to take advantage of the native inclination to love and to be loved.

We are all actually given at times to the feeling that we are not appreciated in the world as we would be ; and under such conditions many a child has been stirred to his very best efforts by a little commendation, a smile of appreciation, or a look of confidence. But the teacher should beware of unjustified praise, and of the everlasting smile, that is soon discovered by the child to be nothing but the cheapest flattery, an empty form which soon comes to sicken him with disgust. The human being is born to court affection, and we must believe that he must have some one to feel with him, some one to understand him, some one to encourage him, some one to love him.

Perhaps we are all too ready at times to love others, and often for no other reason than that they have first loved us. The moment an individual feels that he is without love in the world, that moment he sinks to despair that smacks of suicide.

Love always carries with it the feeling of sympathy, and it would be impossible to love a person without feeling with that person. The food upon which sympathy feeds is similarity of experience; that is, people with similar experiences understand and can feel with one another. Children of any school have multitudes of experiences in common, and the feeling of sympathy among them is actually wider and deeper than teachers are ready to believe. One who has had the toothache can readily feel for another who is afflicted with it; one who knows from his own experience what indigestion is can readily sympathize with and overlook the crabbed disposition of one suffering of dyspepsia; and after we have experienced any misfortune, we are better able to lend sympathy to one who has met the same misfortune. On the other hand, one suffering from headache should hardly expect deep sympathy from one who has never experienced headache, and for the reason that there is lacking the essential unity of experience. It is therefore evident that it is the teacher who knows the experience of the child, who is in a position to move him through sympathy.

Without sympathy there could be no such an impulse

as sociability. That feeling of harmony among individuals which we call sociability is based on unity, on the one hand, and diversity, on the other. Before two individuals of any species can live and work together, they must be sufficiently alike to enable them to understand and sympathize one with the other; yet sufficiently unlike to reveal the advantages and the needs of so living and working together. An Indian and a white man can live together with difficulty; and if all men were blacksmiths, any one would have little need of the others.

The social feelings are deeply rooted in the social instinct, and they are at the root of the harmony of humanity. Every bit of real literature nourishes these feelings; and every effort toward education, whether by school or by church or by state, must touch them. Instinctively, the school child is inclined to sympathize with and help his fellows; but only fortunate life-experiences with people can realize the potential values in the social instinct. This points out one of the most important functions of the school, namely, the development of the moral will.

After we have pruned down the conception of morality to its simplest form, we are confronted with the fact that the moral will is simply the will to serve the good of the race. The thief, the liar, the murderer, the drunkard, the talebearer, the backbiter, are all immoral, because they bring disharmony into the race; and the rescuer, the truth teller, the preacher, the teacher, the Christ, indeed,

are all moral in the degree that they willingly serve the race. The death of Christ reveals the most moral act known to man, and it was prompted by the feeling of sympathy for a needy race.

The act of an individual acting under compulsion is neither moral nor immoral with reference to that individual, but it is non-moral. Such a will is not free, and not in sympathy with the act; indeed, it does not will the act in any true sense. So, too, if there is no alternative, no choice, there is no real act of will. The point to be noted here is, before an act becomes moral, the individual must be in sympathy with that one of two or more conflicting impulses which he chooses to discharge because it is good for every one. Without the social instinct, there could be no impulses to serve the race; hence morality is rooted in the social instinct.

Principle. — The moral will is free will which wills ends that are good for every one.

19-22. *Jealousy, Envy, Pugnacity, Emulation.* — When we come to the instinct of jealousy, we find teachers by no means ready to accept it as a legitimate motive. Many teachers indeed look upon a jealous child as upon one “who hath a devil.” The jealous impulse is egoistic, and for that very reason it is morally dangerous. Yet we must not lose sight of the fact that life is a struggle, and that the individual who will not jealously guard his own rights will soon be deprived of them. When our

rights have been wrongfully appropriated by another, we need the impulse of envy to move us to recover them, and the pugnacious impulse to motivate us to fight for them. In their refined forms, all of the egoistic impulses must play important rôles in the schoolroom; and there are few schoolrooms that do not harbor some children who sorely need to be spurred by these deep-seated motives.

We should not believe that the fighting impulse must discharge through the fist, or that it can be appeased only with blood. The world is full of wrongs that need such fighters as Gladstone and Lincoln and Jane Addams and Roosevelt to meet and down them. The fighting instinct is far more potent in man than in woman; yet the boy who gives up with the first hard problem in arithmetic needs to have his fighting spirit quickened; and the girl who is not keenly jealous of her own good name, or moved by envy toward the wretch who has stolen away her pure thoughts, is sadly in need of egoistic motives.

When we come to the instinct of emulation, we find an impulse plainly elevating. Emulation is the impulse to strive against inferiority. The boy who is unwilling to be distanced in the race; the girl who is anxious to do "as well as the rest"; the teacher who would not "get behind the times"; the woman who would not be seen in an antiquated dress; and the man who "would

not make a fool of myself by trying to talk on such a topic" are all moved by the emulative impulse.

The teacher should often inspire the child by calling attention to what he has done before, or to what she expects him to do now, or, with caution, to what others have accomplished. Family tradition and school tradition are legitimate emulative motives. They may serve as standards below which the individual is unwilling to fall; and the fact that others have done so much is a keen incentive that we may do as well.

23-24. *Physical and Mental Activity.* — We now come to the two master instincts, the generalissimos of impulse, which are revealed in the well-nigh incessant activity of body and of mind. The human body is richly and completely supplied with nerve endings, so that when any part receives a stimulus in the form of motion, a current of nerve energy at once transmits the stimulus to the most ready switchboard, be it in the spinal cord or in the brain, and that nerve current sooner or later finds its way out through the motor nerves to the muscles. Muscles function in movements of the body for adjustment. From the moment of the first breath till the last, the human body is not without its movements. Millions of stimulations, coming in from multi-millions of nerve endings, keep up an incessant activity. The visceral, vasomotor, indeed, the whole host of muscles, are full of activity; and if any muscle fails to receive its quota

of stimulations to call out its normal exercise, it loses tone, the lymph circulation is suppressed, and the physical balance is at once interfered with. If this condition widens and deepens, we soon experience the familiar feeling of lack of exercise, which means that the physical mechanism is in possession of more energy than is being called out, and ennui, or the feeling that nothing at hand is worth while, is perhaps upon us.

Not only does physical inactivity tend toward physical weakening, but without an active life the actual purposes of life itself could not be realized. Only a life of doing can reach the values of life; and thus we see once more the function of our instinct equipment.

Mental activity is in a way the concomitant of physical activity, though not of all physical activity. The psychologist now realizes that every mental process, be it thinking or feeling or willing, is completely determined by accompanying brain processes. This is the fundamental conception of modern psychological thought; and it has been called the "theory of psychophysical parallelism." There are thousands of processes going on in the brain which give us no mental concomitants; but the significant fact here is that we never have and cannot have any mental processes, either conscious or unconscious, without brain processes to determine them. Mind, in brief, is brain function; and, as we have already noted, every organ, be it stomach or liver or kidney or

brain, has its function. The function of the brain is mentation, or mind.

When the individual would fall asleep, he seeks a quiet and comfortable resting place, relaxes all bodily strain possible, and closes his eyes. With the stimulations through ear and eye and muscle and skin thus cut off, the brain activity is curtailed, and under such conditions a tired brain soon ceases to function in mind, and unconsciousness results. If the would-be sleeper is unable to curtail the brain stimulations, — that is, if he has the toothache or indigestion or fits of nervousness, or if he is too warm or too cold or his bed is uncomfortable or noises disturb him, — he will hardly be able to sleep; yet if his nervous energy supply becomes so exhausted that his neural mechanism fails to respond, he falls asleep. If sleep is not complete and dreams appear, it means that the brain is still responding in a more or less feeble way to stimulations from without its own immediate sphere. But given sound sleep, the supply of nervous energy is gradually restored, till at length stimulations are of sufficient strength to awaken the brain processes to the point of consciousness. The sleeper forthwith awakes, and the flow of blood to the brain is increased till the normal state of consciousness is regained.

The fact that should be noted here is that both physical and mental activity are instinctive responses to external stimulations. The sense organs are instruments

adapted to receive each its own rate and form of vibration ; the sensory nerves transmit the stimuli to the spinal cord or to the brain ; the brain is at once a registering station and a great switchboard for switching sensory nerve currents over to appropriate motor nerves, with renewed impetus, perhaps, and thus the individual is consciously or unconsciously adjusted to his environment through movements. The recording mechanism in the brain fixes the experience so that it is available for future use.

The mental accompaniment of the brain processes is what we call mentation, or mind. Through mind, the individual is conscious of his experiences, and he can think them into relation so that a past experience may determine the best reaction to a present stimulation. The human being is thus a complex organism which adjusts its reactions to its environment, so that its days may be long in the land. Anything and everything which serves as a means of effecting that adjustment is useful, and hence interesting to the individual if discovered ; and since all activity, both physical and mental, is in the deepest and truest sense instinctive, it follows that the individual finds use only for those things which satisfy his instincts. Once more, therefore, we may note that while the immediate basis of all interest is use, the ultimate basis is instinct.

25. *Independence.* — The innate tendency of the individual to follow his own inclinations, rather than

those of others, is called independence. The teacher who has tried to motivate a stubborn child; the mother whose infant child has shouted back "I won't;" the English king who was apprised that the tea had been thrown into Boston Harbor; indeed, any one who has seen an attempt to move one against one's will has seen the independent impulse at work.

We all love to have our own way, since the most attractive thing that the mind knows is free will, or, briefly, freedom. Men vote for their freedom, and they fight for their freedom. There never was a war but that was rooted in this very instinct, independence. It is the duty of the teacher to foster the independent spirit. We do not want the "bull head," but we do want students who persistently work out their arithmetic and their Latin constructions. We want children who are not ready to be led into anything and everything; and we want men and women who have been taught to think for themselves and act for themselves. Our schools of to-day would not be the victims of so many cheap fads and so many shallow "methods," if teachers themselves were fully in the habit of thinking for themselves and creating and doing for themselves.

26. *Reverence.* — In reverence we meet another of the emotions. If the teacher will devote a little time to an intensive study of at least one of the emotions, she may not only better comprehend the emotion, but at

the same time discover how instincts have come to appear in the race. Instinct is but another name for a racial habit; and a racial habit is formed by repeating an act so often that it becomes imbedded in the neural mechanism; that is, it finally becomes reflex and inheritable.

Way back in the primitive life of the race, man was a dangerous enemy of man; and the egoistic impulses were in control. A man who lived with his family on one side of a mountain would steal over under cover of darkness and fall upon and destroy the sleeping family of a man on the opposite side of the hill; his only reason therefor being that he willed to destroy the man's family ere the man could destroy his. In time, men learned to combine for mutual protection from their common foes, and the most highly revered man of the tribe was chosen chief of the tribe. Implements of war appeared, among which was the helmet, so valuable in protecting a vital spot from the blows of the enemy's weapons. It was readily found a matter of the highest importance to assure and reassure the chief of the respect and confidence of his followers; and there was no better way at hand for revealing this reverence than to remove the helmet, bow the head, and bend the knee in front of the chief. Such an open exposure was surely evidence of confidence as well as of reverence. It must be noted that these bodily attitudes not only expressed the feeling of rever-

ence, but that they tended in time to cause and promote that feeling. Being found highly useful, these bodily attitudes were consistently repeated through the years and through the generations, until we to-day tend instinctively to assume these attitudes in reverence and worship. Thus we have come to inherit the habits of our ancestors; and the lifting of the hat in reverence to-day, we may believe, smacks of the days of our distant ancestors. It is significant that the acts of assuming these bodily attitudes are favorable to, and causal factors of, the emotion of reverence.

Reverence is an emotion quite as serviceable to-day as at any time in the history of the race. We should still take off our hats to superior merit; we should still bow our appreciation of an act of universal good; and we are not to forget that the man who bends his knee and bows his head in worship is at once stirred by a more full and complete reverence than he could be with these causal factors omitted. Thus it is revealed that useful reactions are repeated in the race in the degree that their usefulness makes them of interest to the race; and once more it appears that the immediate basis of all interest is use.

We are now in a position to go a step farther in our treatment of interest. Our study of the emotion of reverence has revealed the fact that instincts are ultimately founded on use; that is, all of our racial habits

have come to us as reactions which the race has found useful. Racially considered, therefore, the ultimate as well as the immediate basis of all interest is use. It is to be remembered, however, that teaching deals with the individual; and the individual inherits, and does not produce, his stock of instincts. With reference to the individual, therefore, the final cause of interest is the instinct. From the teaching standpoint, then, our most direct and helpful view of interest is that it is immediately based on use, and ultimately on instinct.

27. *Shyness*. — The shy impulse is an instinctive protection against an overassertion of the social instinct. We must all have a measure of suspicion of the motives of others, if we are not to fall ready victims of overconfidence. The reactions of babies in extending their arms to others, the wide-open eyes, and the steady, inviting look, all point to the social instinct; while the reverse actions of shrinking back, turning the head away, yet watching in an Indian-like way, all point to the shy instinct. So, too, the adult is shy of strangers, and wisely refuses to trust people with whom acquaintance, experience, is not established. The proverbial "gold brick" and the whole multitude of "confidence games" may be taken as our justification.

In the school, shyness often gets into our way, but it is always surmountable through experience, acquaintance; and the teacher's skill in handling motives should

readily win the shy child. On the other hand, shyness checks the child's impulses to be too forward, and many times a day the shy instinct keeps the child out of the teacher's way. The "new" teacher finds a ready ally in the shy impulse, for it allows her time to get her anchors set ere the turbulent waves set in.

28. *The Collecting Instinct.* — The impulse to make collections of things is not so impelling as many of the impulses already referred to, yet all of us manifest the instinct in various ways. Boys are interested in getting together a collection of birds' eggs or of cigar wrappers; girls gather up collections of postage stamps or of foreign coins; and the art gallery, the zoölogical, botanical, and industrial museums, reveal the same tendency in adults.

The collecting instinct is a faithful ally in geography teaching; and a collection of history relics is valuable in realizing history teaching. The biological and the physical sciences are furthered by the impulse, and the private library grows with its aid. The exploring truant may be led captive by it, for he may be the very chap who knows where the insects thrive, where the plants grow, and where the products of industry are to be found.

29. *Hunting.* — We now come to an instinct which, like pugnacity and rivalry, is far more potent in man than in woman. The girl plays "hide-and-seek," hunts four-leaved clovers, and seeks the solution of puzzles, to

be sure ; but woman seldom seeks the forest, the jungle, or the wild prairie in pursuit of game. Man has always been the mighty hunter, the Nimrod ; for he is impelled by his mighty instincts of rivalry, pugnacity, and hunting to outwit, overcome, and "bag" the game. We should not believe that hunting savors of thirst for blood. The truth is far enough from that. No sportsman loves to shoot the tame duck, for it sits still to be shot ; but he will strive for hours to outwit the sharp-eyed wild mallard, or to get the fleet-winged canvasback. It is not the sitting rabbit that the sportsman would shoot, but the one that flies down the field so fast that most men must fail to bring him down. It is not the barnyard fowl that he seeks, but the wary grouse, the shrewd fox, the alert and fleet-footed deer.

The hunting instinct has never brought much value to the schoolroom. It is a powerful impulse in the boy, and it is likely to be most highly developed in the very boy that is hard to move in school work ; namely, the youthful hunter, the fisher, the explorer. Set such a boy to work on a composition setting forth his exploits in hunting or fishing, and the teacher may be astonished at the results. Some progressive primarians have devised a few games appealing to this instinct, but they have not gone far. The fact that the hunting instinct is in a fair way to die out of the race, for the reason that the disappearance of wild game threatens the starva-

tion of this impulse, may be taken as evidence that here is one instinct that will never yield to the schoolroom the value even now possible.

30. *Hunger and Thirst.* — Perhaps the two so-called sensuous instincts, hunger and thirst, are the most readily comprehended impulses found in the human being; hence they have been subjected to many experiments. Their relation to interest is easily seen. A man who all his life has disliked the taste of cheese may come in time to despise cheese, for the reason that it disagrees with his taste. He has no interest in cheese, for the reason that it does not appeal to his hunger instinct. Now let this same man discover that cheese is a commodity that may give him a rich income in business, and he may soon manifest the keenest interest in cheese. A new use for the cheese has brought out interest. That use is money making, at the root of which is the property, or ownership, instinct.

Likewise, a man is easily convinced that his immediate food interests are hardly at the control of his will, but that they are due to something in his native constitution; that is, their final basis is instinct. These two instincts are also of ready service in revealing the fact that instinct is not unchangeable; for every one knows that our tastes come to change. Food which we once disliked, we come to like, and *vice versa*. Finally the motivating power of instinct is clearly revealed by hunger and thirst;

and it is evident through them that there is hardly a limit to the motivating power of interest. Thus any man, perhaps, will steal if he is hungry enough; and no code of ethics is interesting to a starving man. Motive is in proportion to interest, and interest is in proportion to the feeling of need or use; and ultimately use is based on instinct. The lesson of drunkenness is one of our mightiest lessons on the psychology of motive. It should be noted that drink is food; and thirst, a form of hunger. A man who has no use for drink is not interested in drink; but a drunkard is interested in proportion to his appetite — the inflamed hunger instinct. When that appetite becomes all-absorbing, it is all-interesting, and hence all-motivating. Thus the drunkard may give up all for drink. Now that drunkard may still live for his wife and his family; but not so keenly at times as for drink. The reformation of the drunkard must proceed along either or both of two lines of motivation; namely, (1) the appetite may be stilled, say by the Keeley cure, and so the drinking motive weakened; and (2) the nobler motives may be strengthened by stirring up their basal instincts of pride (vanity), affection, sympathy, pugnacity, ownership, rivalry, emulation, etc., until their combined motivating power exceeds that of perverted thirst.

The school values of the hunger and thirst impulses are both positive and negative, though apparently the

teacher's work with these instincts is at present mainly negative in character. Neither the overfed nor the underfed child is in condition for school work. Much of our teaching of hygiene is amazingly ineffective, for the reason that the real use of hygienic living is not evident to the child; hence it lacks interest to him. We shall never realize effective teaching of hygiene until we apply our law of interest by revealing the use, or need, of hygiene.

It was pointed out in the article on the biological studies that the headache, the eyecache, the inability to attend, etc., are not utilized as they should be in teaching hygiene; yet bad feeding is the most common cause of all these ailments. We are a race of bad feeders, and our bodies are shouting their protests on every hand. Until children are taught to see the effects of our bad living, we have little reason to expect that better habits will become fixed. Not more medicine, but more sense, more regimen, is our hope.

The sensuous impulses are perhaps the oldest in the race, and their deep-seated claims have accumulated strength through all the years until they have become dangerously obtrusive. Like all the instincts, they are not bad in themselves; but they may easily dehumanize man, and leave him little more than a brute. They must therefore be brought under control. We must understand them, and the school has a sacred duty here. Some day our schools, with teachers and patrons strong

in the sense of duty, and fearless in the cause of life values, will strive to give the race a better and safer understanding of the sexual instinct and the reproductive system of the human being. It is a shame that we will longer neglect this duty. The reproductive system is certainly of no less importance to the race than the digestive, circulatory, or other systems. Life values are fearfully curtailed by ignorance in this holy sphere, yet we sit mutely by and mistake ignorance for modesty, and prefer woe to weal. Pray, let us believe in enlightenment; believe in teaching and giving understanding sorely needed to realize the values of life. We shall never have a complete education, a fully equipped and magnificent manhood and womanhood, until every impulse is understood and controlled. Any impulse is controlled by pitting other impulses against it, and we are to control the sensuous impulses by appealing to the instincts of pride (vanity), pugnacity, jealousy, envy, emulation, reverence, cleanliness, and shame. United forces can overcome any disharmonizing foe.

31-32. *Cleanliness and Modesty.* — Cleanliness and modesty are two impulses which are so elusive that psychologists long hesitated to accept them. We have all seen children who could throw doubt on the instinct to be clean; and others who could shake our belief in an instinct of shame. Yet the fact that children are hard to keep clean must not be allowed to mislead us; and super-

ficial views must not establish a belief in no modesty. We adults are never quite free from dirt, yet the impulse to be clean is with us; and it is everlastingly sending us to the bath and to the laundry. The fact that the whole host of impulses is continually leading the child into things which cover him with dirt, leaves the cleanly instinct with meager opportunity to show; but we must get deeper than appearances.

If a two-year-old child be taken when the play impulse is stilled, his cleanly impulse may show to better advantage. If the experimenter will then direct the child's attention to the back of his hand or arm, and plaster a bit of gum or of dirt upon it, almost invariably the little creature strives to brush the plaster away. So, too, when a child falls into mud, if the play instinct is not ready, the cleanly instinct sends him to the house to be cleaned, and crying may accompany him. An adult will wash his hands and his face about as often as he finds them dirty; and in spite of some evidence to the contrary, men dislike to wear untidy linens, and women avoid unclean aprons and neckbands and shirtwaists and shoes. Yes, we all have the instinct to be clean; and parents, teachers, physicians, and boards of health are utilizing it. Indeed, it is an instinct which has a rapidly growing use as a motive to life values, and never were bathtubs and flypapers and screens and insect powders and the whole host of tools for cleanliness so common as now.

Enlightenment in the usefulness of such ends has brought all this about.

The modesty impulse is quite as elusive as the cleanly instinct. Children often grow well into adolescence with little evidence of shame; yet here again we have not gotten beneath appearances. Every parent and every teacher relies upon the modest motive to protect the child from indecencies; and the ready blush that adorns the cheek when indecencies appear, reveals the deep-seated reactions which characterize all emotions. In a barefoot test for modesty, conducted by the pedagogical department of the State Normal School at Baltimore, twenty-four school children, twelve of each sex, ranging from ten to thirteen years of age, were used. Out of the whole group no one was found who did not reveal increased heartbeat, contraction of the flexor muscles, turning or "dropping" the head, and aversion of eyes or drooping of eyelids, when he found that he was discovered barefooted by visitors.

It is rather a remarkable coincidence that, while the modesty instinct is one of the last to be accepted by psychologists, it is probably true that it has for ages been more effectively and commonly used with definite design in motivation than any other instinct. Leaders of the young have always relied upon it to secure decent conduct, and we should hardly ask for its wider use to-day among respectable people. The fact is, it has often stood

single-handed and alone in the struggle for decency; and, as pointed out in the treatment of the sensuous impulses, we have, and are, shamefully neglecting to reënforce it and vitalize it by a complete hygienic education.

THE MOTIVATING PROCESS

Having finished our immediate treatment of the native reactions of the human being, the attention of the teacher is again called to the fact that without these native reactions of the child, these impulses, we should have no way of influencing the child mind. If the child were so lifeless that he would react in no way to the teacher's attack, there could be no education. Thus it appears that the human instincts are of the highest value in the educational process.

It should be understood that the psychologist does not and cannot make a sharp distinction between a reflex and an instinct. If a reaction to a stimulus is a simple act independent of conscious control, such as is shown when an infant grasps an object in contact with its palm, we allow it to pass by the name of reflex. But if there is a series of reflexes, one serving as cue to the next, such as is shown by a beaver building a dam, or by a bird building a nest, we call it instinct. The difference, in so far as there is a difference, is that of complexity. For practical purposes, all instincts are reflexes. The two are similar in origin, and both have their physiolog-

ical bases in preformed pathways in the nervous system. Both represent such forms of reactions upon environment as the race has found highly useful ; hence they have been repeated through the ages until thoroughly imbedded in the neural mechanism, and therefore hereditary.

From the teaching standpoint, the important fact to be noted concerning the instincts is our oft-repeated fact, that they are the ultimate bases of all the individual's interests. Ofttimes we can account for interest, such as curiosity, in no other way. Since no child can be given an impersonal experience unless he first has an impulse to reach out for it, the very first step of any act of teaching must be to make sure that a motive for the child mind is at hand.

Principle. — The child must always have a motive for getting impersonal experiences, and one of the most vital problems of teaching is that of securing efficient motives.

The practical world has long pointed the finger of scorn at school teaching ; and it has said that the school does not fit children for real lives of usefulness. "The school gives book learning, but the child is unable to use his learning when he gets out of school," is the usual charge. There is altogether too much truth in this charge. Schools really have been teaching facts to children with too little reference to their use. The inevitable result is that along with this lack of use has gone the lack

of interest ; and the school has not only been a dull grind to thousands, but the thousands have actually been unable to see the use of much which the school taught and is teaching. All this is sadly wrong. Our schools must give us men and women of more red blood, ready for the world of industry ; and education must be a preparation for life through participation in life.

Our study has revealed to us that the child must see some use of subject matter before he can have interest in it. Thus it happens that the very thing that teaching has so long neglected to do well is the very thing that the child mind demands first. The child has no motive until he sees need ; and the need revealed to him must be a legitimate use for the subject matter about to be presented in teaching. To illustrate, the teacher who writes the multiplication table of 3's on the board, and tells the child to learn it, is proceeding with no child motive evident. If there is a motive there, it is external and not legitimate ; that is, the motive is that of doing what the teacher orders ; and since no legitimate use for the table is evident, the effort put forth in getting it is drudgery. Now if the child is first led to see that he needs the table to enable him to play "ring toss," his motive will be measured by his interest in playing "ring toss." Then, too, the child who uses the table in playing his game is actually putting the table to use in a legitimate way ; for he is using the number facts to compute his

earnings in his serious business of trying to win the game. All this the child can and does comprehend ; hence there will be no question as to his ability to use what he has learned.

From the teacher's standpoint, the steps in the motivating process are easily discerned ; and since we have already indicated them, we may here state them as follows : —

Principle. — Steps in the motivating process. — (1) Determine the child's impulses, what he likes to do, the ends he values ; (2) seize or devise situations in which the child sees his need of means of reaching these ends ; (3) bring forth the subject matter which will serve as means to these ends.

The child's impulses have already been treated at length. Talking about things, handling things, making things, asking questions about things, experimenting with things, exploring things, playing with things, and so on, are all useful to children in satisfying their native impulses ; and we must interpret child conduct that way. In no other way can we comprehend childish doings and understand children. Here is one field in which the experienced teacher should easily outshine inexperience ; and no teacher can move far up in the scale until she understands children.

The further fact that one group of impulses is strong in one child, and a different group is stronger in another,

indicates not only that the teacher must know children, but that she must know the specific children with whom she works. The dominant impulses of one child may be vanity, pugnacity, independence, physical activity, etc. Such is the equipment of the fighter, the "bully." Those of another may be secretiveness, sympathy, mental activity, and the like; and such is the equipment, perhaps, of the boy who is run over by the "bully."

When the teacher has determined what the child wants to do, the ends he seeks to realize, she may justly feel that he is the victim of her prowess; for she can seize or devise a thousand situations in which the child sees his need of means of realizing his ends. Then, having created a demand, since she also controls the supply, she has "cornered the market" and is dictator. Thus if the child suffers of headache, he readily feels the need of preventive means, and the teacher brings forth the hygiene of digestion in a real and impressive way; if the children are pestered by mosquitoes, they readily feel the need of means of checking them, hence the teacher brings forth a bit of nature study, with its oil remedy. If the teacher would devise a writing motive for first-grade children, she may appeal to the ownership impulse, and ask, "How many of you would like to write your name in your book, so that we may all know whose book it is?" When they are all impelled to write, the teacher brings on the writing lesson. When she would teach

the forty-five combinations, dry arithmetic that they are, she shows the class the "bean bag" game; and when the play impulse goes out toward the game, the arithmetic tables are brought in on the installment plan, as fast as the class sees the need.

There is nothing new in this motivating process, for we have all proceeded in this way for years, and we are still proceeding in this way. When we conceive our need for a pair of shoes, we are moved to buy shoes, and the shoe store is sought. When the farmer finds that his fences are rotting down and no longer able to withhold his stock, he is moved to build a new fence. If a man needs bread, he is moved by his need to go all the way to the bakery and pay five cents for a loaf. He may even buy five loaves at the five-cent rate; but let the baker try to induce him to buy twelve loaves, and he at once begins to measure his needs. A reduced price may move him to buy the twelve loaves; but if the baker then tries to induce the man of twelve loaves to buy fifty loaves, a further reduction will at least be necessary to meet the reduced need, if the man is to buy. Now there will finally come a time when the bread buyer will refuse to buy more bread at any price; and that is the point at which he can conceive no use for more bread. The moment he finds it impossible to conceive how he can use more bread than he already has, the motive to buy is gone; and it will return only with need.

Our conceived needs are often so directly in response to instinct that any one can discern the fact. Thus an angry man feels that he needs some one to give a beating, though the only possible explanation is to be found in the fact that his fighting instinct, pugnacity, wants something to discharge itself upon. So, too, the woman of social status feels that she needs a new hat, though nothing but vanity or emulation, perhaps, could possibly set aside the well-preserved hat of last season. So it appears that the doings of our ancestors are often the only possible explanation of our own conduct; and the deep-seated tendencies which our ancestry has handed over to us come into our education whether we will or not. If, then, teaching is to lay hold of the roots of experience, it must respect the impulses, the racial habits, the instincts. One of the most hopeful signs now visible in the teaching sphere is the growing, even though often unsound, use of play. Play is an impulse tremendously alive in children; and we now turn our attention to play.

CHAPTER IV

UTILIZATION OF THE PLAY IMPULSE

THE critics from the old-time school tell us that the school of their day was a place of work, but that the school of to-day is a place of play. They mean to tell us by this criticism that the schools of to-day are dealing in soft pedagogics, and that we are turning out a generation without backbone. This is a sharp attack upon present-day schools; and before we accept or reject the criticism we must make a candid study of the play movement, and discover what there is of value in it.

I. THE PSYCHOLOGICAL ASPECT OF THE PLAY MOVEMENT

We may recognize three forms of conscious activity: namely, play, work, and drudgery. Play is conscious activity in its freedom. Thus a boy strides a stick and calls it his horse. He rides it as much as he pleases, whips it as much as he pleases, puts it away when he pleases, and with as little care as he pleases. All this is conscious activity in its freedom; hence it is play. We have seen that every mind loves its own freedom,

hence we all love play; and play may be defined as conscious activity that we like.

Work is conscious activity dominated by the object which it seeks to produce. Thus a shoemaker works to produce a shoe. He is not free to make the shoe according to every impulse; but the dimensions of every piece of leather, the size of the shoe, the shape of the shoe, the style of the shoe, the height and length and breadth thereof, are predetermined by the shoe which he is to make. The work is good just in the degree that the object is held sacred. While in play, therefore, we are interested in the activity itself, our efforts become work just in the degree that our interests become centered in what the activity accomplishes.

Drudgery is conscious activity whose value is not evident to the actor. Direct interest is therefore impossible in drudgery, since the use of the effort is not evident. The time-worn illustration of the father who required his son to carry the pile of bricks back and forth across the road is the classic illustration of drudgery. When the obedient boy had about finished his task of carrying the bricks across the road for the first time, his heart began to leap for joy within him, when suddenly the father appeared on the scene and ordered the boy to carry them back; but to the boy's request for a reason, the stupid father's only reply was, "It is none of your business why. Do as I tell you."

Since interest is impossible in drudgery, no one likes it; and we must concede that its educational value is not above zero. Drudgery therefore is especially out of place in the schoolroom, and one of the crying needs of the school to-day is to get rid of drudgery.

There is another aspect of our problem which we must investigate before we can settle upon the educational value of the play movement, and that is the aspect of reference. Does play refer to the past or to the present or to the future? From the standpoint of its origin, play is instinctive; hence we may agree with the claim, perhaps, that play represents the rehearsal of ancestral work. From the standpoint of its function, we must concede that there is some truth in the claim that play refers to the future. Some play does fit for the future. The doll play probably does do more or less in the way of fitting the girl for future motherhood; but we lose our way if we attempt to show that all play fits for the future. There will hardly be any more Indian fighting in the world, hence such play does not fit the boy for future life any more than any play with similar exercise. We may say the same with reference to "hide-and-seek," playing with fire, riding the broomstick, and so on. If any given work of our ancestry is continued quite unchanged in the future, then we can accept the "fitting for the future" claim for play. When the cat plays with a string or with a ball, she is fitting for future life; so too is the puppy that pulls and

tears things with his teeth. In a general way, play may be said to fit for future work in the degree that industry is thoroughly static; that is, unchanging through all the years. In so far as there is progressive change, play is largely antiquated, and even antagonistic to progress.

Our problem can never be solved for teaching by referring it to the origin of play in the past, nor to its unreliable function in the future. We have already seen that play is activity in its freedom; and there is no question but that the child plays because he feels like it right now. The child plays with no care for the past nor for the future, but for the present. He simply plays when he feels like it. With no thought of what he did yesterday, the child may play to-day; and this too in spite of caution that he may pay for it with illness and pain to-morrow. In so far as the child's will, the real child, is concerned, then, the reference of play is present.

A different situation confronts us in work. We work for ends that lie beyond the mere activity, and in some future good toward which the activity leads. Work always looks to the future. A man may work for years, clinging tenaciously to his purpose to see his children grown to a beautiful and enlightened manhood and womanhood; or he may work for treasures in an eternal world. Work, then, has future reference.

Since drudgery is conscious activity whose purpose is

not evident to the actor, it is evident that drudgery is without reference.

Having defined each of the three forms of conscious activity, and settled upon the reference of each, our next step in the solution of our problem is to determine their relative values as the child sees them. We know that every human being loves play better than work, and that we all despise drudgery. Were there no further aspect of our problem, the solution would be at hand; but we must now work into our problem our laws of reference.

We have seen that the child wills to play for present good; yet there is still one question for us to decide; namely, in what degree can the child comprehend the future? We may call on experience to answer. Suppose a primary teacher were to call her children together and say to them, "Now, children, tell me whether you would rather have a holiday to-morrow or two holidays next month." Undoubtedly, teachers are ready to concede that the holiday will be to-morrow.

Experience teaches us that children have little comprehension of the future. The fact is, the future is hard for any mind to fathom. With some experience to base judgment upon, any normal adult mind can look a little way into the future; but inexperienced childhood must live in the present. With sufficient experience, man can fore-tell the new moon, the tide, the eclipse, the return

of the comet; yet we all feel our comprehension of the future curtailed on every hand. The ability actually to comprehend the future is a measure of the grasp of scientific mind. The child is not gifted here. Some men can so think their experiences into unity that they can comprehend eternity in satisfying ways; while even an Ingersoll finds his vision so curtailed that he exclaims, "We lack evidence!" Indeed, we have already seen that the most harrowing of problems is the problem of eternity to the individual who can make no comforting headway therewith. It has also been pointed out that we can know the future only in terms of the past. Since, then, the young child's past experience is very limited, his ability to comprehend the future is very small.

Principle. — A motive for the primary child must have present reference.

We are now ready to give the solution of our problem. Since work has future reference, it is largely beyond the child's comprehension, and so readily sinks to drudgery for childhood. The school for childhood, then, must not really be a place of work. Play, with its present reference, is the only form of activity that the child can readily comprehend. We can therefore understand why the child lives, must live, indeed, in the realm of play.

Principle. — Play is the form of activity most suited to the primary school, for the reason that the child mind readily comprehends only what has present reference;

work readily becomes drudgery to childhood, for the reason that its reference is future.

As the child's experience grows, his basis of comprehension of the future grows with it, and thus in time the child comes to be interested in serious work. Any work whose end is not far off may mean something to the primary child; and it is of the highest importance that he have some such work from the beginning; yet the teacher should see to it that his little work is agreeable to him, and not drudgery.

Since we have now settled upon the general significance of play and accepted it as a serviceable tool in teaching, we may go a little deeper into the subject for the purpose of discovering its specific values, both positive and negative.

The Intellectual Aspect of Play

We have defined play as conscious activity in its freedom. The child is born with a host of impulses ready to discharge with appropriate stimulations; while others, latent at birth, appear with years. These impulses drive the child forward to experiences, and these experiences are the only means of teaching him. To begin with, the impulses discharge blindly; since the child cannot know what they mean; but having once discharged, an impulse is no longer just what it was before, for the consequence of its impelling act has been more or less clearly discerned. Its agreeable or disagreeable aspect is henceforth apper-

ceived with the impulse. So, too, the object calling forth the impulse is no longer the same object, for it now means whatever the contact with it, the experience, means. Thus the impulse to nurse as well as the bottle nursed are changed to the child who has once nursed. A hot stove and the impulse to reach it are both altered to the child by a single act of touching the stove.

The child at play discharges thousands of impulses; and all the time he is perceiving and remembering and relating and unifying the experiences derived. Coördinations of muscles are being established, so that voluntary control is being acquired. Thus the experiences which are being gained may in time be utilized in directing conduct. As an instrument of intellectual development, then, we may accept play as a worthy tool; and though it will be shown later that the imaginative element is weak in the games usually employed in the schools, on the whole we may say that the intellectual aspect of play is rich in promise.

Emotional, Moral, and Social Aspects of Play

The emotional and volitional values of play are not readily available. Indeed, in mere play, these values are hardly evident. If the child is to be absolutely free and unhampered in the discharge of his impulses, he will hardly emerge from the savage state. He must learn to control his impulses and direct them toward ends which

are good for every one ; that is, he must become a moral being. This means that the play impulse is to be guided by reason, and play is to be rationalized. When we rationalize play, we have at once a game. A game is rationalized play — play subjected to rules that are as fair to all players as to any one. It is the game, therefore, that can give us the chain of moral values ; while the contact with others, in game playing, gives opportunities to learn and understand human wills.

In any game we must have a contest. A contest is activity against opposition ; hence it is the rivalry instinct that gives spice to any game. It is also this very rivalry, competition, that raises the possibilities of moral training to the highest power ; for when the glow of competition is at white heat, it is easy for the child to try to cheat. Now, fair play is one of the values of life, and we want the child to learn to compete fairly. We want our whole little world of players to rise up in opposition and stand their ground when a value of life is being trampled upon. Here, then, is a magnificent opportunity to develop moral backbone. Here we may teach the validity of law, the respect for law, the love of law that guarantees to every one his rights. And oh, what a loss if the teacher fails to see that these are the highest values that the game or any other school work can reach ! Would that all men had been trained in such a moral sphere as the school-room game can become. The trouble with that shoddy

merchant and that food adulterator and that grafter and that ballot-box stuffer and the whole band of malefactors is, they do not compete fairly. It is a moral coward that cannot meet the world openly and honestly, and our schools have a sacred duty here. The school has no more vital tool for moral training than the school game. The teacher should lay hold of this tool and ply it with all her skill, seeing to it that the rules of the game are respected and loved and championed by all as the guarantee of rights, of every player's rights.

Principle. — The game is a valuable moral tool in the degree that it teaches each child to will the good of all.

Until an individual has learned to identify himself with the well-being of his fellows, until he has learned to love and respect the universal side of his being, he is not a social nor a moral being, and the emotions and the will of such a being will be continually directed inward toward his own private pleasures, rather than outward toward an ideal world. Morality is the will to serve the good of the race; and the school game is an excellent instrument for its development.

2. THE PEDAGOGICAL ASPECT OF PLAY

We now come to the actual use of the play impulse to the end of realizing the aim of education; and our purpose now is to see how the game actually works in the schoolroom, as well as to see how it should work.

The most uninteresting experience known to the human mind is monotony. The routine of life, the unchanging grind, the nothing new, is our drudgery. Monotony drives men crazy; and even the man whose unceasing manifold duties drive him into insanity is actually driven mad, not by variety, but by the monotony of variety. Change might have relieved him and saved him.

The life of the shepherd may teach us a lesson here. If the reader were to compare the state records of insanity, he would probably be surprised at the high rate for the state of Nevada. Then were he to look into matters a little further, he would probably be surprised to find the high rate usually credited to sheep herders. If the reader could but spend a week with one of these simple shepherds, he would find the explanation of this high rate of insanity to be monotony. Early in the day the youthful shepherd starts out with his sheep. Hour after hour he tramps on, with nothing to greet his eyes but sheep and sage brush and sand and sand burs. On, on till noon; and when he would sit down to eat from his scrip, all that he finds to rest upon is sheep and sage brush and sand and sand burs. On through the day he lounges or toils, and when nightfall is near and he would improvise a fold, all under heaven that greets his eyes is sheep and sage brush and sand and sand burs. Yes, it is monotony that drives the shepherd crazy; and monotony tends to drive us all mad.

If now we apply the law of the shepherds to the school-room, we shall find a lesson there. ✓ That formal drill, which many teachers value highly in many of the subjects, readily sinks into a monotonous grind. If teachers would investigate memory work, which is purely or even chiefly repetition, if they could see how much effort goes to waste when the child is set to work to commit an arithmetic table or a poem or a psalm or a proverb, which he poorly understands, or when he "learns" a formal definition, or when he crams for an examination, that formal drill would soon become a rare experience in school.

We are not to believe that we can get along without drills; that is, drills in the sense of frequent repetitions; but let these repetitions come through varied experiences, not through a set form of memory grind. If the teacher would see how quickly the mind is lost in a formal drill, she may first repeat to herself for twenty times the multiplication fact, 4 times 37 are 148. Then if she will observe carefully the maneuvers of a third-grade child who is worrying over his multiplication tables, remembering that the easy flitting away of his attention may be fully accounted for by the fact that the child's power of voluntary control is many times more limited than her own, she will be in a position to get some conception of the relationship of the formal drill and madness. Now if the teacher will drill the child on the next higher table by using the "guessing game" or the "ring toss game," she

should discover that the attention is far more steady, the interest immeasurably deeper, the efforts far more constant and strong, and the results correspondingly superior.

By way of summary, we may formulate the following —

Principle. — The game is a valuable substitute for the formal drill, which easily sinks into a monotonous and disinteresting grind.

While we are dealing with the formal drill, we can hardly afford to miss the opportunity to carry our study on to the formal definition ; and though this subject will be more fully treated in a later chapter, this is perhaps our best opportunity to lay down a law against the use of the formal definition in the lower grades. Perhaps there is no teacher in any grade who has not seen the futile efforts of children in defining. We have all heard the child define arithmetic, addition, multiplication, geography, physiology, history, and so on to the end. If the teacher once investigates some of this defining to see what conceptions are behind it, she will soon discover that the definitions are essentially empty. The formal definition commonly raises the ignorance to a higher power. If the teacher will only make a candid investigation of the defining ability of a child in any grade from one to and including four, trying him with the simplest and most easily defined conceptions, she will readily find that the child does not think precisely enough and methodically enough

to formulate definitions. The effort at formal defining is therefore drudgery to him. The child lives in his world of experience, and he knows cat, pencil, etc., by the object. He gets new words and their meaning through experience, through use; not through scientific statements. If the teacher would give him the meaning of a new term, she should use the term a number of times, so that he may discern the meaning. It is in this way that he has come to know the meaning of all his terms.

Principle. — The formal definition has no place in the primary school.

3. VALUES IN SOME OF THE COMMON SCHOOL GAMES

The Bean Bag Game. — The bean bag (or sand bag) game, of common use in our schools, is rooted in the instincts, physical activity, mental activity, rivalry, and play. As the game is usually played, three or more concentric circles are drawn on the floor, and their values fixed according to the numbers that the teacher would drill upon. A bag thrown within the inner circle may count, say, nine; in the next outer circle, four; and in the outer circle, two. Children are stationed so that all can see the playing and make the count. The first child is called, and he places his toe at the throwing line, which should be far enough away from the circles to fit the throwing abilities of the players. Before the child makes his first toss, he must say

“Ready.” This is his overt notice to the world of players that he is ready to begin, and that he is willing for all to see that he stands for fair play. If he fails to give such notice, he is quickly called to account by any one; and either some number already agreed upon is deducted from his count (hence subtraction is brought in), or else his count is ruled out for violation of the playing rules, the bill of rights. He throws three or more bags, then proceeds to make his count. Every child is making the count; otherwise value is lost to the school purpose. Suppose this child has one bag in each circle; then his count is 9 plus 4 plus 2, or 15; and he writes the number 15 after his name in the tabulum on the board. If the child fails in his count, it is worthless; and he loses it, and writes a cipher after his name. Any one in the world may judge; for this is a world of fair play. The bags are collected, and the next child called. He steps to the throwing line, says “Ready,” and makes his throws. Count is made as before; and so the game goes on till called. Then each child must count and write his summary, his winnings. Suppose the tabulum shows as follows:—

John	$15 + 0 + 7 = 22.$
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Mary	$10 + 20 + 6 = 36.$
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James	$12 + 10 + 15 = 37.$
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Sarah	$22 + 12 + 13 = 47.$
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Willie	$20 + 20 + 10 = 50.$
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Edith	$12 + 10 + 15 = 37.$
Frank	$8 + 22 + 20 = 50.$
Emma	$15 + 13 + 27 = 55.$
George	$17 + 22 + 13 = 52.$
*Pearl	$20 + 20 + 22 = 62.$

Now comes the comparison of counts to find the winner, and a star is placed to mark the winner's name.

In this game we have a drill on the forty-five combinations (the addition table); and with rapid playing, the drill is rapid. The interest is easily held in the adding drill (with subtraction for failures), for the child clearly sees the use of the counting in this serious business of trying to win the game. The instinctive basis can furnish ample motive, so long as the game is well handled and not overworked. The emotional, social, and moral values are vitally reached in the degree that the silent but master hand of the teacher quietly and surely builds up a spirit that loves and wills nothing less than equal rights and fair play.

The Ring Toss Game. — The ring toss game is rooted in the same instincts as the bean bag game. As it is usually played, a single post, about an inch in diameter, two feet high, and secured by a base, is placed on the floor. Five or more rings, varying in diameter from five to twelve inches, are thrown in attempts to ring the post. The throwing line is adjusted as in the bean bag game. The rings are assigned values to suit the numbers to be drilled

on. Thus the smallest ring may count 6 threes; the next larger, 5 threes, and so on, if the teacher wishes to drill on the multiplication table of threes. Penalties are fixed as in the bean bag game; the class is placed to favor making counts, and the tabulum is prepared on the blackboard. The first player steps to the line, says "Ready," and throws the five rings, one at a time, in his efforts to ring the post. He then steps forward, lifts the rings from the post, and, holding them so that all may see, he makes and records his count. Thus, if he has succeeded with the three large rings, his count is 3 plus 6 (or 2 threes) plus 9 (or 3 threes) are 18. If the player forgets to say "Ready," the predetermined penalty is applied. If he fails in counting, he loses his count. Each child takes his turn, till summaries are called for. The winner is marked as before.

It should be noted that the values in this game are not different from the values in the bean bag game; yet it is a different game, and we need a good variety of games. Either game may be varied to suit purposes.

The Guessing Game. — The guessing game is rooted in the instincts, secretiveness, curiosity, mental activity, rivalry, and play. It is played about as follows. The teacher announces that the game will be played, say with the multiplication table of nines. One child is then called upon to come out in front of the class, conceive a number fact from the table of nines, and whisper it to the teacher.

The children try in turn to guess the number fact. Thus one child says, "I guess you are thinking 4 nines are 36." The leader answers "No." Another guesses "8 nines are 72." The answer again is "No." Some one in time guesses the right number fact, and the leader answers "Yes." The teacher knows the conceived fact, hence fair play is assured. Any child making a mistake in multiplication may be ruled out of the game. The successful guesser becomes leader in the next game, and the drill is continued.

The values in this game are not different from those in the two games just treated, unless it be in the fact that the drill may be very rapid and searching. It is one of the most untiring games to children, and this is chiefly due to the fact that the powerful curiosity impulse is at work. Any one who has observed how curious one child is to know a secret whispered to another may understand the strength of the impulse to know what fact the leader has whispered to the teacher. This game makes legitimate use of the curious instinct; and it affords opportunity to give negative lessons on base curiosity, by comparison.

Touch-the-Table Game. — The basal impulses in the touch-the-table game are essentially the same as those of the guessing game, though they work out somewhat differently. As this game is played, one child is sent from the room, and another child of the class rises and

touches the table. The first child is then recalled, and he tries to point out the one who touched the table during his absence. "Was it you?" he asks of one. "No, it was not I," is the reply. If the child replies, "No, it was not me," he is ruled out of the game. "Was it you?" is asked of another. "No, it was not I," may again be the reply. Finally comes the right one, and the reply is, "Yes, it was I."

Another child is sent from the room, and two children sitting together are called upon to touch the table. The child returns, and is told to look for the guilty pair. "Was it you?" he asks. "No, it was not we." "Was it you?" "Yes, it was we."

Here we see an interesting drill on the troublesome and elusive grammatical forms. A child may know that the correct form is "It is I," but, not unlike his older brethren, he is the victim of everlasting bad forms which his social surroundings have bequeathed him. We have seen that grammar cannot give us correct speech. It may fix the forms, but only language drill can put them into speech. In the game, the child is actually establishing the use of the grammatical forms, under the penalty of forfeiture of his playing rights for a single violation. Compare this with a formal drill on these forms, where no vital motive can be set, for the reason that a child cannot understand why he should use "It is I," and we may get a glimpse of the teaching art.

Here is revealed one of the most valuable uses of games. In order to play the game, the child strives to fix in habit the forms which are quite meaningless to him now, yet which mean a future good.

Principle. — The game may serve to bear a future end, and give it present reference to the child.

Earlier in the present chapter, we deferred the treatment of the imaginative element in games, with the notice that it would be taken up at a better time. Our purpose was to defer the treatment until we had investigated some of the popular school games. Since we now have before us a number of these games, we are in position to proceed with our topic.

If the teacher will make a brief analysis of the intellectual values in the bean bag game, she may note that the children play the game as they have seen it played. It is quite evident that the reproductive imagination is at work, but that there is little or no trace of the higher form, the constructive imagination. The child does not construct his own play in this game, as a chess player or a checker player does; but one child plays about as all others do. The same statement holds true for the ring toss game, the guessing game, and the touch-the-table game. Indeed, this is a valid criticism against the school games in general. We must regret this fact; for though the primary child's constructive imagination is not strong, the popular school games do not exercise well the little

constructive power that he has. When we remember that the Brooklyn Bridge, the screw propeller, the dynamo, and the whole list of progressive movements have grown out of the constructive imagination, we must long to see some of our progressive primaries yet devise a supply of school games less weak in the imaginative element. We need such imaginative values as are found in such outdoor games as "hide and seek," "blackman," basketball, football, and so on. It is fortunate that many of our outdoor games are good supplements of the schoolroom games, in the appeal to the constructive imagination.

In the matter of devising new school games, primary teachers are not found as competent as the importance of the work seems to demand. "Where can we get games that will win the children?" and "How many games do we need?" are questions heard from primaries on every hand.

If the teacher will note the games that have captivated the race, she may get a clew to our answer to the first question. Throwing the quoit or horseshoe is a diversion found the world over; and it is a game that has held the race for centuries. In this game of world-wide interest, game makers have discovered a universal motive, and they have brought it into the schoolroom. The hard and dangerous horseshoe has been replaced by the harmless bean bag, or sand bag, and thus the objectionable

element eliminated. Now if the teacher will carry her study to the county fair, the state fair, the world's fair, the board walk along the beach, she will find there the great racial pastimes that are so interesting that people actually pay for the privilege of playing them. This indicates interest deeply rooted in the race, and therefore nourished by the very instincts that impel the child in the schoolroom. The familiar cane rack has already been brought into the schoolroom, and made over into the ring toss game; the fortune wheel has been purified and made over into the guessing game; indeed, a handful of these widely attractive pastimes have been utilized in teaching, but there yet remains the great host of popular attractions awaiting the magic touch of the skilled primary hand to mold them into instruments for the teaching art.

Principle. — The great national pastimes that have endured for ages are replete with motives that may be directed toward educational ends.

No one should complain that many of these pastimes are tainted with vice. Remolding may purify any of them, and yet give us their impelling values for better ends. The instincts at their roots are of the highest value, and they may be turned toward the most righteous ends. That shameful pool box, so attractive to thousands, is rooted in those valuable instincts, curiosity, experimentation, ownership, and rivalry. It

is not the game of chance that we may condemn, for life itself is an amazing game of chance; but we must condemn the game of chance as it is revealed in the hideous, unproductive, immoral pool box. All wickedness represents the unguided, untutored, unprofitable, inhuman side of our impulses. Impulse can see only in the light of experience.

As to the number of games needed in the schoolroom, the case is clear. Few sights are more pitiful in school than that of a group of children playing a game that they have worn into shreds. If game playing itself is not to fall victim to the law of monotony, the teacher must command a rich and varied supply of games. The lesson of the sheep herders is significant here.

Principle. — Game playing is not immune to the law of monotony; hence the primary teacher should equip herself with a rich and varied supply of games.

There is yet an aspect of game playing which needs our attention. We have all seen children keyed up to the highest pitch of interest, apparently just for the sake of interest. It ought to go without saying, that interest is something which is altogether too valuable to be wasted, and that the mere catering to the interests of childhood is weakness. Interest must be utilized in moving the child to realize the values of life; otherwise it is as sounding brass and tinkling cymbals.

Principle. — Interest for the sake of interest is not

educative; and the value of interest lies in its efficiency as a motive toward realizing the values of life.

Playing games just for the sake of interest is the counterpart of playing games from which monotony has stolen the interest. Either defeats the educational purpose. It is a pity that we have both these weaknesses in our schools. Teachers and pupils must have worthy purposes in play, and the purposes of the two must not be identical. The teacher uses play as a means of deriving interest for some worthy end, otherwise she has missed the purpose of the play in school; but the child uses play as an end in itself, otherwise it is not a motive to him.

Principle. — Play is an approved tool in teaching so long as it remains an attractive end to the child, and a worthy means to the teacher.

Perhaps the treatment of the subject of play should not be closed without reference to its value in securing unity of minds in a class of children. It is true that when all the minds of a class are working together toward a definite end, we have realized the unity for which class work seeks. Since the school game is such a universal means of motivating children, it may move a group of them quite as readily as one. It may, through sympathy, imitation, etc., even move a group more readily than any one. We can therefore understand why teachers find that "subject matter taught through play is so effectively taught to the class as a whole." We should not fail to discern,

however, that it is not alone the play, but rather the unity of minds secured through play, that gives the real key to the explanation. Unity of motive is the one cue to a sustained class attention.

Principle. — The only persistent unity in the attention of a class is secured through unity of motive.

CHAPTER V

THE TEACHER AN INFLUENCE

WE have seen that the only teacher worth the name is experience; and that the course of study is a selection of those impersonal experiences of the race which we believe will prove most valuable to the life of the child. We have also seen how the native impulses of the child are to be utilized in moving the child to personalize the selected impersonal experiences of the race, and that without these native impulses there never could be such a thing as education. We are now to consider the outer influence which lays hold of the impulses of the child, and, with more or less efficiency, influences now this impulse to reach out toward this bit of experience, and now that impulse to go out toward that bit of experience. This direction of the experiences of the child toward ends that are valued by the race is what we call teaching. Since the course of study determines more or less definitely what impersonal experiences the child is to receive, while his native impulses, as remolded by experience, determine whether or not he will receive them, it is evident that the teacher is to function as a mediating influence.

Principle. — The function of the teacher is to influence the child to personalize the impersonal experiences which constitute the course of study.

A teacher must be, indeed, a veritable dynamo of influence. An individual who is weak in influence cannot be a teacher. Let experience show us the truth of this last statement. Three teachers apply for the same school. That one is the successful candidate who wields the greatest influence over the school board. Ask how long she will be able to stay in that school, and our answer is, she may stay so long as she maintains her influence, and she must go when her influence is gone. Ask how much good she can do in that community, what she can be worth to that community, and our answer is, it all depends upon her influence. Ask if that teacher can really organize that school, make the bad boy over into a good one, silence all opposition, and run things about as she wants to, and our answer again is, it all depends upon her influence. Briefly told,—

Principle. — “Teacher” is essentially only another name for influence.

What, now, is this influence? Can we discover its meaning, its secrets? Again experience must be our teacher.

Here is a boy who has stolen a pencil. He is eleven years old, and knows that he should not steal. Now, teacher, what will you do with him? Will you flog him? That was the old panacea. You might bring

him up before the school and "make an example of him," and say, "Now, children, here is a boy who has stolen a lead pencil. He is a bad boy; for only bad boys steal." But does the teacher know that public reproof is a fearfully dangerous weapon? It may kill the last trace of the boy's self-respect, and thus all influence will be lost. No, no; we cannot risk such means. If the teacher would be of real service to the boy, she must first hear his own mind. He can reveal it. Suppose it is this: "My father died when I started to school, and mother died last summer. Brother and me went to live with Uncle Jim; but times got hard, and uncle told us last night that we'd have to look out for ourselves. Brother is six years old, and him and me started out last night to find a place to stay. We slept in an old shed out in the edge of town last night; and when we got up this morning I bought a loaf of bread and a ring of bologna for our breakfast, and I had only ten cents left. I bought sixteen papers with the ten cents; but it was so late when we got out that the other boys beat us sellin' papers, and we couldn't sell but ten papers. We had the other six left on our hands. I give brother five cents to get his dinner with, and I had five, and we started for school. When we got here I remembered you told me to get a pencil for to-day; and I didn't have no money to get one with, and I found one on my desk, and I took it."

We now have our real problem before us. It is not

an improvised case. How should the case be handled? In the first place, it should be noted that there are three things in the wrong; namely, the pencil is in the wrong hands, the owner has been unjustly deprived of his pencil, and the boy has been guilty of wrong doing. The first two wrongs are not hard to right. We will return the pencil to its rightful owner, and take care not to advertise either the theft or the boy who committed the same. Now, with two wrongs righted, we are ready to try our skill upon the third.

Our problem of righting the wrong-doing boy is a serious and delicate problem. The future of a human life is here at stake. One thing is clear; namely, whatever else we do, we must make the boy feel that we still believe in him. While we cannot countenance the wrong act, the taking of property that does not belong to him, it was in a weak moment that the boy took the pencil. We must lead him to feel, therefore, that we still believe that in his stronger moments he is fully competent to show that he is a stronger and nobler boy than his act has revealed. The teacher must never lose the child's confidence that his teacher believes in him and trusts him; for the moment this confidence is gone, the teacher's influence is gone with it, and that teacher is no longer teacher in reality.

Principle. — It is the teacher that the child feels believes in him, who is in a position to influence him.

The fact that the boy who took the pencil is in need of a home must not be allowed to interfere here; but it offers another vital means of befriending the boy. Nothing less than the return of the boy to his own ideal self can be accepted. The loss of the boy's ideal self is the serious loss with which we are to deal, and not the loss of the pencil. Money cannot measure the former, while five cents will replace the latter. When the boy is led to feel that his teacher sees his side of the case, feels his side, indeed, and still believes in him, he is ready to accept such a friend as safe to follow; and at once that boy is in the teacher's hands, and the teacher may return him to his ideal.

Influence is control over the will of another. Such control may come through either or both of two sources; namely, knowledge and feeling. The teacher may actually increase her influence in her school and community by revealing how much she knows. The worst trouble here is, people already assume that the teacher knows essentially everything, and it is hardly safe for most of us to try to improve our influence along this line. To be sure, the teacher might show the farmer how to improve his business, the blacksmith how to make a better weld, the carpenter how to saw a better joint, the preacher how to fill empty pews, the matron how to care for the baby, the cook how to bake better bread, and so on; but it is probably safer for most of

us to rest on assumed laurels. We are therefore driven to the belief that the hope of increasing our influence must, for most of us, lie in the realm of feeling. Indeed, it happens that the chief determinant of volition is actually feeling and emotion. It is not to our purpose to be psychologically specific here; but experience everywhere reveals this fact. We all respect and perhaps admire the individual who knows much; but we love and swear by the one who wins our feelings. We may like to meet the person who knows more than we do, but we choose to go with and be with and marry the one who is sympathetic and warm-hearted and loving and winsome. However intellectual a man may be, unless he has along with this quality a keen sensitiveness to the conditions about him, a rich and ready sympathy with the interests and the ends of others, he is not a leader of men. The most ready approach to our own wills is therefore through feeling; and we must believe that it is not different with others.

Principle. — The most feasible approach to the will of another is through feeling.

It is evident that the highest of all influence is to be derived through a happy union of the two sources, knowledge and feeling. Such an individual must be intellectual and bright and promising, and at the same time warm-hearted and kind and inviting. Such a union is the teacher; for "teacher" is but another name for influence.

The intellectual aspect of our problem of influence can reveal some valuable laws. Thus, if the teacher's requirements appear unreasonable to the child or to his parents, the teacher's influence is weakened by disbelief in her judgment. If her requirements appear to be beyond the school rights, so that children or parents feel disposed to challenge her attitude, a feeling of opposition springs up; and again the teacher's influence is shaken. It is therefore evident that the teacher must lay down only reasonable and enforceable requirements, if she is to maintain an unshaken influence.

Principle. — School requirements must be reasonable and enforceable, if the school influence is to be unshaken.

It often happens that a teacher reproves a child so often that he feels his freedom curtailed in her presence. Any child loves his own freedom, and when the teacher reproves, the child must feel that it is for his own good; that is, for his own freedom. This is a happy relationship which the teacher must seek to establish. It even pays not to see some things, rather than lose influence by overcriticism; yet the teacher who makes her criticisms in sincere and effective ways need hardly refuse to see all. Authority should not be oppressive; if so, the instinct of independence, and perhaps of parental vanity, may be aroused, and the spirit of rebellion engendered.

Principle. — Authority should be so administered that the child does not feel the lack of real freedom.

If, on the other hand, the teacher's treatment of the child leads him to feel that the teacher expects only good conduct from him, his feelings of independence and pride become allies of the teacher. A child in such a happy situation readily strains himself to maintain the confidence and respect of his teacher. This is the treatment that should be offered to all children; for we have seen that the child must never be allowed to believe that the teacher does not believe in him.

Principle. — Children should be treated as if only honorable conduct is expected.

The impulses of pride and independence are very much in evidence in American schools, and they are reliable motives when the teacher has learned how to use them. We often hear the statement that "a good teacher knows how to render herself useless." What this statement says is untrue; but what it means to convey is true. A teacher can easily be too much in evidence in a school; and the teacher who has learned to guide her school and yet keep herself apparently in the background, has learned how to ally herself with the child's impulses of independence and pride. Thorndike has therefore given us a "true bill," —

Principle. — "The practice of leading pupils at such a distance that they seem of themselves to be following

their own initiative is one of the highest of the teacher's arts."

Apropos of the subject of teaching influence, there is one type of child that often gives teachers endless trouble, and teachers seem unable to understand him. It is the "institutionalized child." It should be noted that not all such children come from institutions, such as the orphans' home and the home of the friendless, as the name really indicates. Experience may be such as to develop this type of child in homes apparently good, but in reality very poor. An "institutionalized child" is one who has never met enough of a genuine mother's influence. One of the most understandable impulses of a mother is seen in her readiness to see the side of her child in any controversy, and to defend him against attack. A father or a brother or a sister manifests this same spirit, but hardly in the degree that a genuine mother does. We must believe that this impulse is not unworthy. It is a poor understanding of human instincts which claims that hired servants can fulfill the place of a mother. "Institutionalized children" never believe "with their whole heart and soul" that some one is always ready to see their side of things. Such has been their experience that it is hard for them to believe that they will be safely represented in any controversy. Their experience has missed the mother. When they meet trouble in school, therefore, the teacher

should not be astonished to find them quite ready to deny any and all charges against them, and to oppose and even lie to the last trench.

Principle. — The “institutionalized child” is hard to influence, for the reason that it is hard for him to believe that any one believes in him.

The influence of a mother is what the teacher will find the “institutionalized child” lacks. Some one to love him, some one to hope for him, some one to live for him, some one to believe in him, has not been his. He cannot, therefore, give it to others. The man who condemns the mother who clings to her wicked, blood-thirsty child, even to the very scaffold, fails in his understanding. The moment an individual fully believes that every one has forsaken him, that moment he becomes in his own mind an outcast in the world; and, believing, as he must, that the world is hostile to him, his springs of charity are stopped, and the instincts of sympathy and sociability give place to the older and more primitive instincts of envy and pugnacity. Whatever there is of evil in his heart is therefore loosed, and his conduct may smack of ancestral days of treachery and blood.

No, we must not believe that the child is unchanged for having had no mother, no father, no home. The teacher will find a difference in the concrete. The teacher must believe that the home influence is directly

related to her own; and the teacher who does not strive to make an ally of that influence must lose a part of her own. So, too, the home must feel that the school influence is a necessary supplement to its own; and the home that does not strive to send the child forth with a deep feeling of harmony between the home and the school must fail to get its largest measure of value out of the school. The home has no gift to the school that is quite so valuable as the feeling of harmony between home and school, which it builds up in the minds of its children.

Principle. — The best school gift of the home to the school is the feeling of unity between the home and the school which the home builds up in the minds of its children.

One of the most pitiful sources of loss of school influence is seen in what we may candidly name home jealousy of school authority. It is a condition altogether too common to find parents who may mean to do well, thoughtlessly and recklessly, and some perhaps enviously, undermining in their children the feeling of respect so essential to the authority of the school. What a pity, indeed, that a patron will vote a tax upon himself to maintain the school, deny himself privileges in order to send his children to school, argue for the support of the school, and yet faithlessly and jealously kill the most vital power which the teacher and the school can exer-

cise over his children, namely, influence. The school must have authority, strong authority; and fortunate is the child who is in contact with such an influence. The best of us are weak at times, and we may often sink below our level of moral strength. When we do fall below our norm, a deep-seated respect for authority is altogether wholesome. We all know how readily a child loses respect for a teacher who "has no government," and some of us know the pitiful consequences. No child respects a teacher whom he feels he may not obey; and a teacher should ever feel that a ready, willing, and complete obedience is a mark of high respect.

Principle. — Children respect teachers whom they feel they must obey.

A teacher who cannot command the respect of her students cannot be influence, cannot be teacher. Any teacher who willfully destroys her own influence, or that of the school, should be dismissed and perhaps fined to imburse the school treasury; and any patron who is guilty of willfully and maliciously attacking and destroying school influence should be fined or imprisoned. Educational influence is a power altogether too valuable to be trifled with; and the German schools can teach us a lesson here. Mistakes in the management of schools we shall find; but primitive methods of dealing with these broken limbs of influence should no longer be permitted in a civilized state.

There is another source of school influence which is commonly overlooked by both teachers and patrons, and that is the respect for work. In this day of soft hands and indigestion, of elaborate dress and evening dinner, of social class and discredit of work, we are actually losing respect for work. Along with this loss, our basis of morality is shaken; for the moral life, when stripped to its simplest form, means a life of service. Independent of social position or of inherited wealth, we must teach the young to look forward to lives of work; to be unwilling to take something for nothing. Train them to look upon it as a sin to stalk through life without adding something of value to the world; to be unwilling to leave the world poorer for their having been. The individual who consumes fifty foot-pounds of the world's available energy, and gives back but forty is a negative quantity, ten below zero in the final estimate.

Principle. — Children should be taught to respect work, and to be willing to give themselves to lives of work.

When asked how we may lead the young to appreciate lives of work, our answer is the one answer which must be given wherever appreciation or interest is in question, namely, reveal the use. We are most fortunate in this day in that we have learned to command the young child's efforts through play, until the time comes when he has gained sufficient experience to appre-

ciate serious work. We have already pointed out the fact that the primary child is able to appreciate many forms of work whose ends are near at hand, and that it is highly important that the child have some such agreeable work from the beginning. The teacher's solicitude should be that she does not stifle him with work which he cannot appreciate. We have all seen Shakespeare's "whining schoolboy," and our lives are replete with illustrations. The kindest thing, perhaps, that we may say of such teaching is, it does not lead to respect for work. We want intelligent work in our schools, and we would develop agents of production, and not slaves. Our chapter on motivation is our offering of means. The work bench and the laboratory, the excursion and constructive work, are all the most hopeful indications. Domestic science is a magnificent newcomer; if for no other reason, then for the one reason that the use of it, the need of it, is readily evident to rich and to poor alike. It should bring back respect for the kitchen, restore dignity to housework, and bring disgrace to the shallow-minded nothingness that is now so ready to claim respect and attention.

In building up the best influence in any field of education, the school and the home should freely conjoin. The school needs the best influence of the home, for the reason that the home needs the best influence of the school. When we realize that the school has the child

less than one eighth of the total time during the year, we must feel that if the influence of the school is to be permanent, it must extend beyond the school and into the home. Parents as a rule are ready to welcome the school influence into the home, and teachers must endeavor to extend the very school processes there. This cannot be well done till the teacher knows the home of the child. If the primary teacher is endeavoring to teach her class to count, her efforts will never be fully rewarded until the child learns to use his counting in his little life problems; and the best of motives are often found in the home. Thus a six-year-old girl feels that she must set the table for her mother. The mother contrives with the teacher, then says to her daughter, "My little girl may set the table for mamma when she can count out the right number of knives and forks." With the motive to set the table impelling the child, she begs to learn to count, indeed, learns to count, and then she is self-drilled in counting the number of persons that are to sit at the table, the number of knives and forks, and so on. Here is the harmony of school and home influence, and the school can never realize its full value with anything less.

Principle. — The teacher should know the home of the child, in order to extend the school influence into it.

The closer the relationship of home and school, the more easy it is to bring about school reforms. It is

the patron who has learned to work with the school, and who has felt the pulsebeat of the school, who is able to understand the needs of the school and work with the teacher to bring about genuine reforms. Tradition is often firmly in the way of change, and the teacher must often widen out her acquaintance and influence before changes may be safely attempted. A school reform, like any other reform, will never succeed until the people are ready for it; and a premature measure must die of malnutrition. Changes must come if progress is to continue, and enduring changes require concerted action.

Teachers can no longer hope to escape the leadership of education in their communities. The teacher must stand humbly above her community educationally, and pull for better things. Now whatever else the teacher does, she must not lose her hold on her constituency; if so, she ceases to be teacher, and she will quickly be elected secretary of the exterior. Sometimes she must give, and sometimes she may take; but all the time she must know the pulse of the people. Such is our social structure that the mass is ever moved and controlled by the few, by a mere handful of individuals who think for the mass that follows. Some of these thinkers are active supporters of the school, otherwise there would be no school; and it is this little group of thinking supporters of the school that the teacher must convince, if

she would augment her influence to the point of effecting a school reform. These leaders may or may not be members of the school board; but the teacher who can control this group is master of school affairs. We must believe that this is legitimate politics. With the thinking friends of the school won over to any measure, the next move is to work for the necessary majority.

Principle. — To gain influence sufficient to effect a school reform, the first move should be made to convince the thinking friends of the school, then comes the move to gain a majority.

PUNISHMENT

The function of education is both positive and negative; for the teacher must not only give her attention to building up good habits of reaction in her children, but she must also tear down bad habits which the children may have already formed. When an individual is undergoing any training, that training is giving him control of himself, if it is genuine; that is, the individual is gaining freedom to do whatever he wills to do with himself, and at the same time the training reveals to him what he ought to do. Any training which reveals to the individual what he ought to do, and at the same time gives him control of himself, so that he is free and able to do whatever he knows he ought to do, is discipline. Discipline, therefore, is subjective freedom; that is, it frees the will

by putting the whole being at its command. Until an individual is able to do whatever he knows he ought to do, he is not free in the world.

Principle. — Discipline is subjective freedom.

Any training that we may call discipline must therefore leave the individual in better possession of himself. The man who is a victim of bad habits is not free; he is enslaved by his habits. Genuine discipline would liberate him by giving him command of himself. So, too, the individual who actually does not know how to go about it to break his bad habits is not free; and any training that could reveal to him what he ought to do to break his habits would be discipline to him. It is thus evident that any punishment which does not leave the child with a knowledge of what he ought to do, and with a strengthened will to do it, is not discipline; and it is not efficient punishment.

Principle. — Punishment is efficient in the degree that it is discipline.

We may repeat that the individual who does not know what he ought to do is not free; and the one who knows what he ought to do, but cannot bring himself to do it, is a slave. Such is the world of will, that all wills which seek only their own selfish ends, with no thought of the rights of others, cannot be free; for the reason that they must come into conflict. Such wills need discipline. We have already pointed out the fact that the will whose acts are

good for everybody is the moral will. It is therefore evident that:—

Principle.— The ultimate aim of discipline is the development of moral will.

We must here insist that we are not to mistake physical pain for those subjective changes which constitute discipline. The thump on the head, the tug at the ear, and the stripe on the back, may or may not lead to discipline; but they are not in themselves discipline. If any so-called punishment does not lead the child to discern that his deed has destroyed in a measure his own freedom, it fails of discipline; for the reason that the child is no better fitted to judge conduct than before. The fact that freedom of the self is the most interesting of all things to mind, indicates the only essential pain of punishment; namely, the pangs of lost freedom. If this inner pain is not felt, no outer pain has availed aught in the way of discipline.

Principle.— The pain of lost freedom of the self is the only punishment worth the name.

The individual who is really and completely punished for lying, we may say, feels that his act reveals to him his own weakness, and that henceforth he must watch himself and give himself less freedom than before. The self no longer trusts itself as before, and so curtails its privileges. The fact that the lie may be discovered by others may give the individual further reason to be

ashamed of himself and to hide himself as one who has lost his freedom. His better self may even drive him to feel for others, in that the lie of which he is guilty is misleading to them and fills the world with disharmony. A lie, in short, is a fearful master that puts the liar in chains, checks his freedom, and enslaves him. If not, there is no punishment, no hope.

For the young child whose limited experience cannot enable him to see far into the future, we must substitute more real for these ideal pains. If he wrongs his dog, we take away his privileges with the dog. If he promises aught and fails to fulfill we refuse to accept further promises; and so his freedom is curtailed. If he takes away his playfellow's trinkets, we refuse to allow him to have the playfellow or his trinkets. All these punishments reveal immediate consequences; and deferred consequences fail to deter the child. If the consequences do not appear to be taken seriously; that is, if the loss of freedom does not bring adequate pain; or if we are at loss to find more substantial consequences, then we may resort to physical pain.

However present-day disciplinarians may vote on the subject of corporal punishment, the vote cannot change the validity of the consequence. Since no child directly wills physical pain, but accepts it only against his immediate will, it is a smarting loss of freedom. The child must will the justice of any punishment before it becomes

discipline to him; and this is the thing that is hard to reach with small children. It is nevertheless true that the thump that the child does not understand in some degree is an unkind and useless punishment.

The fearful maze of arguments which recent years have brought out of the subject of corporal punishment has not availed much. Corporal punishment is effective punishment for young children just in the degree that it is really felt as a loss of freedom. Without wading through the long chain of arguments against corporal punishment, we may note that the most potent claim against such punishment is that it is artificial. Any punishment which does not grow naturally out of the wrong deed, but may be arbitrarily imposed, is artificial. The pain of a burned finger is a natural punishment, since it grows naturally out of the act of touching the flame. So, too, the pangs of conscience follow naturally enough in the wake of lying, stealing, etc., in an emancipated mind; but just what relationship there exists between the act of telling a lie and a switching of the back is not at once evident. If the two are linked together, therefore, the association is not natural and inevitable, but arbitrary and artificial. The very fact that a given form of punishment is artificial, means that it must be uncertain in two ways. In the first place, since the connection between the deed and the punishment is not inevitable, not natural, the child may fail to make the connection

at all. Thus a child may not connect his act of stealing with the physical pain of punishment, but with an irate teacher, or even with his own lack of shrewdness in hiding his theft. In the second place, since the association of the pain and the deed is arbitrary and artificial, the teacher's moods may cause the association to be fickle or weak or excessive, or even to be omitted altogether.

Principle. — Corporal punishment is valid for young children; its greatest weakness is seen in the fact that it is artificial and therefore uncertain.

If any one should feel that we are now arguing for corporal punishment in the schools, we beg that such judgment be set aside. Corporal punishment is hardly in need of arguments for its use; it is too freely used already. Our purpose here is rather to fix its validity in so far as it has validity. We must not forget that all punishment is unfortunate, for the very reason that it is negative; but such is the structure of the little, living, impulsive, habit-forming machine with which the teacher deals that bad acts and bad habits are constantly revealed; and it is quite as much the sacred duty of the teacher to uproot bad habits as it is to establish good ones. The teacher must accept this duty and execute it firmly, candidly, and relentlessly. Punishment is deterrent in the degree that it is adequate and certain.

The real fact is, punishment is likely to be the most un-

welcome task that confronts the teacher, and just for that reason we find no work from which more teachers shrink. Punishment at best is a trying duty, and perhaps there is no teacher who has not found herself at her wit's end to know what should be done in this field. We should not take away from the teacher any just means of meeting the disciplinary problem, and corporal punishment should and will remain. It will continue to give trouble, chiefly through bad judgment. Infliction will often mean affliction; but given children as they are, and teachers and parents as they are, this punishment may be at times the only one of promise; and we must still honor the teacher and the community that accept it rather than dissolution. A mutual understanding between school and home is ever a saving clause of influence; and it is encouraging to note that many progressive schools are conserving influence by the thoughtful regulation of corporal punishment.

As the years and experience of the child increase, his ability to respond to the inner and deeper forms of punishment is increased, and physical pain should in time give place to the ideal pains already mentioned. When the attempt to use these higher forms of punishment fails with adolescents, the teacher should at once believe that she has not reached the deepest will of the adolescent. We have already seen that all will-influence must come through either knowledge or feeling, or both; and the

influence gained by punishment does not escape the law. The child must know moral conduct, and he must know wherein his wrong act has fallen short of morality. Private reproof is the teacher's mightiest weapon here. Such reproof gives the higher feelings a chance to come in; and we have already seen that feeling is the chief determinant of volition. A candid, sincere, sympathetic attitude is indispensable in reaching the child's ideal; and the penetrating, encouraging, self-revealing possibilities of private reproof commend this form of punishment as the most efficient weapon of punishment that the teacher can command.

Principle. — Private reproof is the teacher's strongest weapon of reforming influence.

Whatever else the teacher may do in the way of punishment, she must not degrade school values by using them directly as means of punishment. The practice of punishing children by keeping them in school at recess or after school hours is shortsightedness; but it reveals how teachers are pressed for means of punishing delinquents. We want the child to value the privilege of being in school, and the teacher should not intentionally offer even a hint that may pervert the child's mind in this sphere. Assigning a lesson to punish a child is the very essence of poison to school influence. The teacher who tells a child that he ought to love his study, and then wheels about and uses that study as a means of

punishment, might consistently be fined for destroying school influence.

Principle. — In punishment, the teacher should avoid disagreeable associations, in the child mind, with school values.

We must finally recognize the fact that now and then the whole available stock of school influence will prove inadequate to move and reform some will. We have moral degenerates in the world, and they appear now and then in the school. The contaminating influence of such individuals should not be allowed in the schoolroom. No teacher and no school is all-powerful; and when it becomes evident that all the influence that can be marshaled is inadequate to reform the will of a bad child, that child should go. We are told that such action only turns the child out where he goes rapidly from bad to worse; but our reply is, his presence in school is altogether too expensive; and even if, after expulsion, he goes all the way to destruction, our total good must be conserved. We know that the good shepherd left the ninety and nine, and went out to recover the lost sheep; but it should be remembered that no good shepherd would ever go out after the hundredth sheep until the ninety and nine were safely inclosed.

CHAPTER VI

METHODS

METHOD refers to the way a thing is done. In teaching, it refers to the way an impersonal experience is personalized. Subject matter refers to the impersonal experiences to be personalized. These two conceptions, method and matter, can never be fully separated in teaching; and, as has already been pointed out, the relationship between the two is far more intimate and inevitable than many so-called "schools of method" would have us believe. Imagine how narrow and empty the task of teaching one to eat, independently of what is to be eaten; of teaching one how to sing, without reference to what is to be sung; of teaching one how to treat disease, without reference to what disease; or of teaching one how to do something, anything, indeed, independently of what is to be done. The teacher is therefore cautioned against overexpectation from any isolated treatment of method; for there is but little in the way of forms of procedure that is applicable to a wide range of subject matter. Thus a chapter on methods must of necessity present a very limited aspect of teaching.

I. METHODS OF DEALING WITH APPERCEPTION

A young child was shown a cup. It looked at the cup a moment, then reached out its hand toward it, and began to cry. Investigation revealed the fact that the child had often been fed from the cup, and thus the sight of the cup called up past experience which the child would now repeat. To the child the cup meant something to eat. The meaning was the past experience which the mind read into the present experience.

The mother saw that same cup, looked at it a moment, then waved it away, as tears started in her eyes. Investigation revealed the fact that the mother had often seen the husband drink the fatal intoxicant from that cup; and that now it called up the death of her husband, and the drunken row in which he was killed, and her own blighted hopes. All this was the meaning of the cup to the mother.

Principle. — Meaning is past experience which a mind reads into a present experience.

The process of reading past experience into a present experience, or of unifying the old and the new, is called apperception. Without this process, it is evident that nothing could have meaning to us. It is also evident that meaning is an uncertain quantity, and that the idea we get from an object depends upon what we read into it. Since childhood experience is very limited, it follows that

we should expect things to mean far less to the child than to ourselves. The teacher must be continually on guard lest misunderstandings arise.

Since each new object of thought must be apprehended in terms of past experience, it is again evident that experience is the beginning point of any and of all instruction. We have defined experience as contact of the individual with the world about him, and we are now to study a method of teaching based on the direct study of objects.

The Objective Method

How does the child get his primary ideas of the world of objects? Experience must teach us the answer. It is evident that the first time a child sees an orange, it can have little or no meaning to him. If he has had some related experience, such as seeing round objects or yellow objects, the orange may have a trifling meaning to him; but it cannot mean "orange." Now let us watch the native impulses at work to bring experience.

The moment the child sees the round yellow object, he has an impulse to get hold of it. One sense, seeing, has already worked upon the object, and now a second sense is after it. The moment he seizes it, he has an impulse to exercise a third sense upon it, and he puts it to his mouth. Smell, as well as taste, now has its chance upon the object. The next moment, perhaps the familiar childish act of thumping objects is seen, and thus a fifth

sense, hearing, gets a chance to come into play. All these impulses mean something to the child in the way of experience, and hence of education. The senses are the only original capital of the child, and he is born with impulses to use them. Anything, therefore, upon which he can exercise his senses is useful, hence interesting to him in the way of satisfying impulse. It is thus evident that: —

Principle. — The native interests of children lie in the sphere of the senses.

When the child has come into contact with the object, through some one or more of his senses, certain effects linger; and the contact, with its effects, we call an experience. The next time the child sees an orange, it means something to him; and the more experiences he has with it, the more the meaning. The fact to be noted here is that primary ideas must come from personal contact with objects; that is, contact through the senses. The attempt to give the child primary ideas of things without presenting the things themselves is therefore unwise.

Principle. — Primary ideas should be taught objectively.

The fact that a child comes to school with a rich life experience of six years means that the really primary ideas to be gained in school are relatively few; yet the law of primary ideas is constantly felt in the school-room. Thus a child who has never seen an island is unable to comprehend the term "island." Even though

he has seen both water and land, and is told that "an island is a body of land surrounded by water," we all know that his conception will never be clear until he has actually come in contact with an island of some size. The school has to give many such primary, or semi-primary, ideas; and every subject of study furnishes its quota. Such conceptions as mountain, river, slope, gulf, confluence, sea, plain, and so on, are to be made safe in geography teaching, by making sure that the child has come in contact with the real objects, even though small. So, too, such ideas as two, three, ten, addition, multiplication, fraction, and so on, are to be secured by objective presentation. The method which uses objects to present ideas is called the objective method.

The Illustrative Method

We should not confound the objective method with the illustrative method. A teacher may tell a child that two and three are five, and use objects to illustrate; or she may explain the action of the human heart by using a diagram of the heart to assist. These methods are illustrative only; but if the teacher were to provide the child with splints and tell him to count out two in one group and three in another group, and then allow him to discover from the objects that two and three are five, the method would be objective. So, too, a boy in physics might be told that the law of the lever is, "Power times

power-arm equals weight times weight-arm," and then a lever provided to illustrate. The method would be illustrative, for the reason that the object would be used only to illustrate the fact already told. If, however, levers are supplied and directions given so that the boy discovers the law from the levers for himself, the method is objective, for the reason that the objects disclose the law. The illustrative method, then, is the method which uses objects to illustrate facts.

The Laboratory Method

When an individual seeks to find a truth by the objective method, he may experiment with the objects, changing them by composing or decomposing them, or by manipulating them into apparatus, in the effort to make the objects give out a truth. Such a method is known as the laboratory method, or the method of experiment. It is usually looked upon as a progressive, industrious procedure to make the objective method reveal a wanted truth. The laboratory method is objective. It is to be noted that this method seeks to create experience; thus it has been called the method of discovery. It is a method which is rapidly growing into use in many ways, and it is destined to command an important and permanent place in teaching; for the reason that it recognizes experience as teacher.

Illustration of the Laboratory Method in Arithmetic. —

Suppose a teacher has taught her class in arithmetic how to find the area of a parallelogram, and that she now assumes to teach the class to find the area of a triangle. She may take for her objects parallelograms similar to those used in finding the areas of parallelograms. The students may construct their own parallelograms out of cardboard, if convenient. Each child has a number of unlike parallelograms, and the teacher now directs each child to take one and fold it carefully along the line of one of its diagonals. Next, it is broken or cut in two, and the two triangles are compared by superposition. They are found to be equal. A child is now asked to state the law for finding the area of parallelograms (already known), and we may suppose his statement is, "The area of a parallelogram is equivalent to the base multiplied by the altitude." He is next asked to state how the area of his triangle may be found from the area of the parallelogram when known. His reply is, "The area of the triangle is equivalent to half the area of the parallelogram." A second parallelogram is now folded and treated as the first. A third and perhaps others are treated in the same way; the number depending upon the need. When the students have discovered the unity of the processes of dealing with the individual triangles, they have discovered the law for finding the area of triangles; and they state it perhaps in the form, "The area of a triangle

is equivalent to one half the product of base and altitude" (true in numerical terms only).

In any objective teaching, we are altogether too likely to take it for granted that the object used must be one that appeals to the eye. Psychological inspection, however, reveals the fact that in any schoolroom there are some minds that most readily respond to objects that appeal to the eye, others that most readily respond through the ear, and still others that most readily respond through bodily movements. The first group is the group of optiles; the second, the audiles; the third, the motiles.

If the teacher would investigate the foregoing fact for herself, she may arrange for a few tests, as follows. The students are directed each to note and report what image comes into mind when the teacher speaks the words "mother," "six," "party," and so on. With careful procedure the teacher will find that some students see the mother, others may hear her voice, and still others may discern their own movements of caressing the mother, or of speaking the word "mother," and so on. With reference to the number "six," some students may see the figure six, others may hear the spoken word only, and still others may feel the movement of writing the figure six. With reference to the word "party," some may see party faces, dresses, etc., others may hear party voices, party music, and so on, while still others may apperceive the party in terms of dancing, walking, standing, talking,

or other movements. Most minds are mixed types; that is, visual with reference to one experience, auditory in another, and motor in another. We may classify them, however, on the basis of the dominant tendency.

The optile may get poor hold of what he hears only, and audiles are likely to be slow in seizing what they see only, and motiles are most at home if they can do things. Thus the teacher who draws an illustration on the board, or writes a word or figure, must not forget that her effort may be especially helpful to only a third of her class; that another third needs rather the sound of her voice, while the others need the opportunity to draw or speak or write. These different types of mind must be allowed for, if we are to fit our teaching to the minds to be taught.

Principle. — Teaching must allow for the fact that different stimuli are needed to appeal best to optiles, audiles, and motiles.

There is a marked tendency among teachers to use quite exclusively such illustrations as are suggested by the teacher's own mental type. We must insist that this is an injustice to a large part of her class. Since the optile most readily visualizes things, and the audile most readily hears things, and the motile most readily acts things, the teaching process will go astray if it does not allow for all. Geometry teachers will find much of their trouble explained in this way; and the Latin teacher may get a helpful suggestion. The audile is likely to be

weak in geometry, and perhaps ready in Latin ; while the motile will likely show the reverse.

2. METHODS OF DEALING WITH MEMORY

We now come to a mind function that every one appreciates: namely, memory. Teaching has always put great stress on memory work ; yet there is probably no mind function which has been so abused by bad methods of dealing with it. We are still emerging from the age of "Mnemonic Helps" and "Memory Devices." It may be frankly admitted that on the whole these so-called aids were bad doses for the already overburdened and dyspeptic memory ; and quite thankful we may be that their days are about over.

The psychology of memory is neither intricate nor heavy ; and any teacher may discover the psychological bases of recall by experiment.

Experiment for finding the Bases of Recall.—Write out a list of thirteen unrelated words, twelve of which are about equally interesting to a class of children, and one very interesting. The following list is suggestive, but only suggestive :—

1. rat	6. grass	11. { house
2. arithmetic	7. sugar	
3. water	8. Fourth of July	
4. book	9. paper	12. fish
5. horse	10. stone	13. coal

Each child is provided with pencil and paper, and notice is given that the teacher is about to read a list of thirteen words, and that the purpose is to see how many of them each can remember. All are instructed to listen intently until the reading is finished, no one writing in the meantime; and that when the signal is given, each may write as many of the words as he can recall, and in any order of recall. The directions should be made clear before the list is read. Nothing need be said about the repeated word.

If there are thirty children taking the test, something like the following result, taken from an actual test of thirty sixth-grade children, may be expected. The number opposite each word indicates the number of students who remembered the word.

rat	27	grass	20	house	} 28
arithmetic	24	sugar	26	house	
water	18	Fourth of July	29	house	
book	21	paper	16	fish	23
horse	22	stone	19	coal	27

The report reveals the fact that the first word, the last word, the repeated word, and the very interesting word are the best remembered words. Now repeat the test the next day; but this time make the most poorly remembered word of the first test, "paper," the repeated word in the new test; and choose two other poorly remembered words of the first test, to be used as first

and last words of the new test. Substitute a new very interesting word. The new list may then stand as follows:—

1. stone	6. Christmas	9. sugar
2. book	7. house	10. horse
3. coal	8. { paper	11. rat
4. fish		12. grass
5. arithmetic		13. water

Care should be taken that, in rearranging the list, the words do not become related; that is, one suggesting the next through associated meaning. The following table will show about the result that may be expected, and this table represents an actual test as indicated before.

stone	28	Christmas	28	sugar	25
book	25	house	18	horse	20
coal	20	paper	27	rat	22
fish	21	paper		grass	19
arithmetic	24	paper		water	26

The test again reveals the fact that the first word, the last word, the repeated word, and the very interesting word are the best remembered words. We should not assume that this test is invariable. The tests may actually fail to give these results; but a majority of a dozen such tests will reveal such results, if the lists are varied and selected with care to fulfill directions as given. The fact that every remembered word is more or less

interesting, and the interest not definitely known, is in the way. The two results given reveal the bases of recall: —

Psychological bases of recall	{	Primacy
		Recency
		Repetition
		Interest

The first word in each test was one of the best remembered, and it represents the primary impression. The last word was one of the best remembered, and it represents the most recent impression. The repeated word in each case was well remembered, thus revealing the value of repetition. Finally, the most interesting word in each case was well remembered, thus revealing the value of interest, in determining what is remembered.

We have now found experimentally the fundamental facts about memory; and the method used illustrates the laboratory method. Following the practice common to this method, we should now check up our results by experience, and see whether experience corroborates or negates our results.

We have all had more or less experience with the memory of aged minds. What does that experience reveal? When the gray-haired man forgets everything else in his life experiences, those of his early days still cling. These are his primary impressions. Take now our case over into the schoolroom, and we may see what the evi-

dence is there. Most every teacher has had some experience in teaching children to "speak a piece." Now suppose a child has learned his "piece," and he comes up for the first rehearsal with one word of the selection so mangled that it spoils the meaning of the "piece." What does the teacher do? Well, she drills and drills (repetition) on the correct form until she feels that the unfortunate primary impression has been securely routed; yet to make sure, the painstaking teacher drills a little more, and then a little more, all the time dreading the possibility of the return of the first impression. Finally, the child has said the selection through without mistake a score of times, and the teacher feels safe. The patrons gather, and our speaker is called out to do honor to the school and to the training. Now, teachers, without hearing the rest of this true story, what do you predict that this child did when he came to recite his "piece" under embarrassment of the audience? "Went back to the primary impression," you say. Well, that is what he did. Thus it is that we are all of us continually returning to our primary impressions, and the law of primacy holds in our experience.

Next comes the law of recency. How does it check up with experience? When the teacher herself stocks up her memory for an examination, at what time does she get down to the hardest grind? Not a year before the examination, nor a month before; but the few days immedi-

ately preceding the ordeal are chosen in which to cram the facts. So, too, we review our students just before an examination, for the reason that we believe in the recent effort. Thus the law of recency holds in our experience.

Repetition is our third basis of recall, and no one will question its agreement with experience. When we would have the child learn the multiplication table, we have him repeat, repeat, repeat. When we would memorize a poem, a rule, a definition, we repeat. Yes, we fully believe in repetition, and everywhere we find the repetitive memory worked to its own death. So many facts are ground in by repetition that they choke one another in the race for possession, and we all know from experience that amazing majorities of facts thus memorized actually die out of mind.

We finally come to the basis, interest. When we attend a lecture, what facts do we carry away with us that remain longest? It is very evident that they are the interesting facts. When we travel, what memories linger? Again, the interesting experiences. When we have read the newspaper through, what items linger? Again, the interesting facts. So it is through the manifold experiences of life; the interesting experience is the one that sticks with us. The law of interest is valid in all memory work.

Principle. — Interest, repetition, primacy, and recency are the psychological bases of recall.

The teacher may now be interested in knowing which of the bases of recall is most reliable. We have seen that it is the old in the new experience that gives us interest; or, more specifically, the old repeated in the new is interesting. The old corresponds to the primary impression, the new to the recent impression. Thus the old repeated in the new gives us primacy, repetition, and recency combined; and the three together give interest. Formally considered, therefore, interest is equivalent to the other three bases combined.

Principle. — The most potent basis of recall is interest.

No fact ever comes into mind wholly isolated from the rest of our knowledge, for every fact must have some relation to past experience before it can have any meaning. The law of apperception holds; and a thing with no meaning to us could never get into mind. The more past experiences a fact is related to, the more its associations in the mind; hence the more effectively it is anchored in memory. If a given idea is associated in mind with three ideas, it is, generally speaking, three times as likely to be recalled as though it were associated with but one; for if any two ideas are associated, when either is called up, the other tends to come up with it. If, for example, we visit the United States Senate and hear a senator speak, the next time we visit the Senate we are likely to recall the senator and his speech. So, too, if we were to read the speech later, we should be continually

thinking of the speaker and of the hall. The act of relating two or more ideas is thinking. We have seen that no fact, whether primary or repeated or recent, can get into mind, let alone be recalled, without associations. It must be associated with ideas already in mind before it can have meaning. It is therefore evident that:—

Principle.—The real key to memory is association, or thinking.

We have just stated the most important law of memory that psychology has to offer the teacher. If the teacher would fix facts in the memory of her pupils, she should lead them to think about the facts. Have them see the cause of the fact, the effect of the fact, the use of the fact. If such relationships are established, the fact becomes a real mental possession. Thus, if the child is told that flies should be screened away from his table, he may readily forget the fact; but if he were shown the filth on a fly's foot, and the typhoid bacilli in it, he could see the relation of cause, and perhaps his own case of typhoid would assist him to appreciate the effect; and both would enable him to see the use of keeping flies away from his food. When he has thought out these relations, the chances are good that the sight of every fly on his food will recall the fact that we have sought to impress.

So, too, if the child makes his own rule in arithmetic, and uses it; if he sees the cause of a history fact, and

the result, as well as the value of the fact to himself; if he sees the reason for a grammatical construction, the use of it; if, indeed, his school work is not a grind of the repetitive memory, but an intelligent understanding brought about by thinking things into relations, the teacher may rest assured that she is getting the highest value out of her educative processes, and at the same time she is a master mechanic of the memory art.

We may now discern more fully why interest is such a potent basis of recall. The basis of all interest is use; and only through thinking can one discern the use of a thing. When a mind has thought out the use of a fact, it has connected the idea of the fact with a multitude of other ideas. This working out of a network of relations which the fact bears to other known facts secures the fact in memory. A perfect mind would mean, among other things, a complete system of interrelations among all the ideas known to it; and while we may never expect to reach a perfect mind, yet our ideas are useful to us just in the degree that they are related. We may therefore lay down the following:—

Principle. — A stock of ideas is valuable in the degree that the ideas are built up into systems relating them in useful ways.

There is no question but that our schools are still guilty of the stuffing process. We are too anxious to read just so many books, to cover just so much of the

course of study, rather than to set the young to work on the serious task of thinking their experiences over into the values of life. We still rely far too much on the examination, with its wretched tendency to foster the very stuffing process that we would avoid. We preach one thing, and we do a very different thing; but always it seems to be the purpose to stuff the memory through repetition. The fact is, from the primary school through to the final degree in the university, we are still on a dead strain to remember, and we are not giving enough time to thinking ideas out into their many essential relations. Therefore we fail to remember. Thinking is the real key to memory; and if there is no thinking, then repetition can avail nothing. The obsolete name for the stuffing process is "cramming"; but perhaps it is not good form to resurrect this term here. The pity is, not that we still have the name, but that we have the process which it names. Cramming is attempted memory through repetition and recency; but since the essential key, thinking, is lacking, real memory is also lacking; and thus the ideas loosely jumbled into mind soon fall out from the lack of connecting roots.

Principle. — Cramming is memory on the bases of repetition and recency; and it fails in the degree that it lacks association of ideas, or thinking.

Returning now to the basis primacy, we should note that, while primary impressions are not relatively numer-

ous in the school, yet there are many primary or semi-primary impressions which should be guarded in school. Thus it is important that the child should conceive the school, not as a penitentiary, but as a happy social unity in which each is working for the good of all. The first impressions which the child gets of the teacher and of school authority mean much; and the first impressions of books, of study, of school freedom, of tolerance, of give and take in unity, are of vital concern. A favorable primary impression is a memory boon; but a bad first impression is hard to overcome.

Principle. — The primacy basis of memory is the teacher's ally so long as first impressions are favorable to the aim of education.

When we come to a closer study of the recency basis of memory, we wonder what life would be if the recent and near-at-hand experiences appealed to us no more than others. The present must mean more to us than the past, for we are living in the present. Our brains are so constructed that our recent experiences, on the whole, are more vivid, more present in mind, than the removed experiences of the past. There are thousands of past experiences which will never be repeated, hence we would not have them linger in the mind. Recency tends to relieve us from going over and over these experiences, so long as the near-at-hand is of interest to us.

Principle. — The recency basis of memory is an

efficient means of freeing the mind from the treadmill of past experiences.

We all have heard people lament the fact that our minds do not retain everything; in brief, that we are not so constructed that our minds could forget nothing. Such a construction would be a calamity. If we retained, with impartial memory, every fact of experience, what a fearful load of lumber we should have to overhaul in every act of thinking. We are occasionally put to discomfort by forgetfulness, but better that than to have our minds stuffed with the significant and the insignificant alike, until our thoughts could hardly turn round. Forgetfulness has its value; and a good memory forgets a multitude of past experiences. What a memory should retain is that group of past experiences which is needed to anticipate what our next step should be; in short, the future. This is exactly what interest is struggling to do.

Principle. — A memory is good in the degree that it remembers those portions of past experience which are valuable in anticipating the future; and this is the evidence of the extreme value of the interest basis of memory.

It is conceded that one memory is better or worse than another. We are born with brainstuff of some quality, and this perhaps the teacher cannot change. As one magnet retains better than another the changes made in it, so one brain retains better than another the

changes made in it. This quality is what the psychologist calls native retentivity. Psychologists are not agreed as to whether or not education can change the native retentivity; but memory through the association of ideas is what the teacher can and must command; and the association of ideas, as we have already pointed out, is thinking. If the teacher would investigate the value of thinking as a basis of remembering, let her keep a record of evidence of decaying memory in the aged. It will be found that the earliest loss is the memory of proper names. The gray-haired man is constantly troubled to recall names. His memory of relation words—that is, verbs, adjectives, prepositions, and conjunctions—is far more true to the very end. Most names, especially proper names, have no inherent meaning. They stand rather for the concrete object. Relation words, on the other hand, as the name indicates, reveal relation, association, thinking. We accept names, and ask no reason; indeed there is usually no meaning to them, and John is simply John.

With relation words, the case is quite different. We cannot use such words until we have discerned their meaning, and this we do by comparing the cases in which they are used. In other words, we must first think out their meaning, and every time we use them in life, we must think their meaning. It is thinking, therefore, repeated thinking, that fixes the relation word

in memory. So, too, it is the use of proper nouns through acceptance and without meaning, or at best with only accidental and varying associations, that gives them their loose hold in memory.

Perhaps our treatment of methods of dealing with memory should not be closed without attempting to lay down a principle to guide the teacher in the serious problem of determining what should be memorized. The earthworm style of swallowing down everything, in the hope of getting the right thing, is no longer permissible in education. The teacher must now know the specific what and why of memory work required. History may no longer be a matter of committing and reciting pages, nor geography a matter of memorizing places, nor grammar a matter of memorizing rules and forms. We have all perhaps seen the futility, to say nothing of the waste, of such teaching methods; and we are now demanding definite aims and definite results just in the degree that teaching is a profession and not a trade.

The real fact of our case is, we shall have quite enough for the best of our memories to do, if they retain only those facts of experience which the teacher can discern are likely to be used. There is no end to facts which might be memorized, and no memory could retain more than a mere fraction of them. We are therefore brought down to selection, and only the most useful facts should be memorized. It is at least safe to rule out the memori-

zation of such facts as are not repeated often enough in experience to hold them there after they have been memorized. We may therefore lay down the following law of memorization:—

Principle. — Memorize those facts of experience which are likely to be repeated often enough in life to be retained.

The rule for adding fractions is likely to be repeated frequently in the life of any individual; hence it should be memorized by every child who formulates it in arithmetic. It is reasonably certain that the rule for finding the greatest common divisor will not be useful in the life of the individual; hence it should not be memorized. So, too, the child should be drilled on the spelling of words which he uses, but he should not spend time learning to spell words which he does not use; and no child should spend time and energy in memorizing definitions or rules or paragraphs which do not promise a wide range of usefulness.

3. METHODS OF DEALING WITH IMAGINATION

Imagination is virtually a closed book to most teachers, and misunderstanding is the result of the lack of comprehensive insight into this function. A better understanding of the working of the imagination is one of the sore needs of the schoolroom; yet the methods of dealing with the imagination of the child are not as

difficult to comprehend as the prevailing lack of their understanding would seem to indicate.

Imagination may be briefly defined as the consciousness of objects not present to the senses. All memory is therefore imagination. If the mind were unable to bring back into consciousness an object once present to the senses, — that is, if it could not imagine the object, — then there could be no memory. It should be at once pointed out that both memory and imagination deal exclusively with the materials supplied by experience, and that the most fanciful imagination can imagine nothing whose elements, at least, have not come through experience. No imagination can picture a color which it has not seen, a taste which it has not met in experience, or a smell which it has not encountered before.

Principle. — The material of imagination is past experience.

Memory gives us a more or less faithful reproduction of past experience; but since our interests bias us in seeing, hearing, feeling, and so on, no memory ever gave one a complete and perfect reproduction of past experience. Now, imagination may seize the past experience, break it up, perhaps, and recombine the elements into wholes to suit the individual's impulses; yet no absolutely new element can appear. There is nothing in the mind not previously in the senses.

Memory always refers to an experience as past; but

time reference is not necessary to imagination. In other words, memory locates an experience in time; but imagination may deal with past experiences without thought of when they occurred. When the mind simply reproduces, or reinstates, a past experience, we have the play of what the psychologist calls the reproductive imagination. If, in addition, the mind recognizes the experience as one which it has experienced before, we have memory. Memory is, therefore, reproduction and recognition of past experience. If, on the other hand, the mind reproduces images and puts them together in new ways, we have the play of the constructive imagination. Thus the ancients imaged the head of a man and the body of a horse, and combined them to give the centaur. So, too, the constructive imagination has given us the Brooklyn Bridge, the screw propeller, and the whole array of inventions; but no element of any of them that did not come through experience.

We have already noted that we anticipate the future on the basis of the past. The value of memory is seen in the fact that experiences repeat themselves, and that what has been in the past will be again, with some changes, perhaps, in the future. We all know that it is seldom that an experience is repeated in exact copy; but we have to deal a little differently with to-day's experience. Imagination makes it possible for us to deal with changing experiences, as memory adjusts us to unchanging experi-

ences. Thus imagination has its function in life. If we are to be a progressive race, rather than static, we must believe in the constructive, the higher form of imagination; and the teacher must understand this brain function and deal with it freely, in the effort to realize the values of life.

Tradition tells us that the child is strongly imaginative, and that the childish fancy should give place to the real problems of life. Let us see if the real teacher, experience, agrees with this. Suppose the teacher would teach the child the number idea 3 plus 2 are 5. How does the child mind work in getting possession of this idea? and what function does the imagination serve in the process? Here is a primary fact to be taught; hence it must be presented objectively. Suppose the child is first led to see that —

$$3 \text{ acorns} + 2 \text{ acorns} = 5 \text{ acorns.}$$

So far, the number fact is hopelessly unified with the idea acorns; and if it should happen that the child could never see this number idea except in connection with acorns, then he could never get the number idea loose from the idea acorn; hence five would always mean to him five acorns. The teacher therefore next shows him the number fact in a new connection, say, —

$$3 \text{ splints} + 2 \text{ splints} = 5 \text{ splints.}$$

The child has now seen the number fact in connection

with acorns, and also with splints. The number fact itself, therefore, is formally twice as strong as either idea, acorn or splint. Thus when the child thinks $3 + 2 = 5$, either of the two ideas is about as likely to come up as the other. The number idea is thus becoming freed from the concrete.

The teacher next gives the child a new concrete; say,—

$$3 \text{ apples} + 2 \text{ apples} = 5 \text{ apples.}$$

The number idea is now three times as strong as any one of the ideas, acorn or splint or apple; and when it comes to mind, the tendency of any one of the varying ideas to come up is checked by a similar tendency of each of the others (primacy, recency, and interest have some influence here); hence the number idea is being freed from the varying concomitants.

Suppose the child next meets this number idea in connection with trees, and then in connection with pencils, and so on. The number idea is thus gaining in strength, while the varying ideas are losing through conflict. As experience widens, the difference is increased, and the time comes when the permanent idea, the number idea, will be freed from the concrete, and become competent to exist in mind as a mere abstraction, but applicable to any concrete.

The law which accounts for the formation of any and all abstractions has just been illustrated, and since it is an

important law in teaching, we may give it the following simple statement : —

Principle (Law of Varying Concomitants). — If a given element of experience is associated at various times with various elements of experience unlike each other, the tendency toward the recall of any one of these various elements is checked by a similar tendency in favor of each of the others ; so that the one permanent element will be set free from its varying concomitants.

It is important to note here that when the number idea has been isolated, it exists only in imagination. Threeness, twoness, and fiveness exist nowhere independently in the world ; but they are discerned by the mind in relation to objects. In the beginning, the child could not imagine these abstractions, for the reason that he lacked the number of experiences necessary to isolate them from the concrete. Not until the child can think the number in the abstract, can he readily apply it to any of his life problems ; and numbers are rapid and convenient tools for handling experience, just in the degree that they are abstract, purely imaginative. Until the child can isolate the enduring elements of any experience, he cannot imagine that experience in any ready way ; and the wider and more varied the experience, the stronger the imagination becomes.

Principle. — Imagination grows strong with the ability to isolate the idea from the real ; and this ability comes

only through the law of varying concomitants, operating on a varied experience.

By way of further illustration, we may investigate the mind movement in forming the conception, rectangle. Suppose the teacher first presents a rectangle of white pasteboard, 8 by 3 inches. In so far as the child can image the rectangle, the image may contain the following elements : —

plane surface	opposite sides parallel
pasteboard	four right angles
four sides	size 4×3 inches

The teacher next presents a rectangle, say, of ordinary red paper, 5 by 4 inches. The child mind may, in this case, discern the following elements : —

plane surface	opposite sides parallel
ordinary paper	four right angles
four sides	size 5×4 inches

If now the rectangles be laid aside, and the child forms the image, rectangle, the common elements of the two rectangles of his experience will be stronger than the varying elements, and they thus begin to pull away from the varying elements.

A third rectangle is met ; say, one of yellow wood, 12 by 2 inches ; a fourth one of blue cloth, 7 by 6 ; a fifth one of black sheet iron, 9 by 12, and so on. The child mind now images the common elements far more readily than the

uncommon; and the conflicting uncommon elements lose in the race for recognition. The child's idea of rectangle will thus contain the permanent, the essential elements: plane surface, four sides, opposite sides parallel, and four right angles; with the weak, accidental elements: pasteboard, paper, sheet iron, wood, etc., lagging behind.

As experience widens, the child finds no rectangle that does not reveal the essential elements, and they come in time to dominate the idea, rectangle. With wide experience, therefore, when the mind thinks rectangle, the strong, enduring, essential elements are the only ones that are sure to come up. Thus the common elements come to be the past experience which gives meaning to the rectangle. The common elements, then, constitute the definition of rectangle; that is, a rectangle is a plane figure having four sides, the opposite sides parallel, and four right angles; or, more briefly, a rectangle is a right-angled parallelogram.

We may now inquire a little more fully into the method of formulating definitions. If we can discover a form through which imagination moves in framing definitions, we can facilitate the defining process. The following experiences, common definitions, may be our teacher: —

NAME	CLASS	DISTINGUISHING CHARACTERISTICS
1. A quadrilateral	is a plane figure	having four sides.
2. A parallelogram	is a quadrilateral	whose opposite sides are paral- lel.
3. A rectangle	is a parallelogram	whose angles are right angles.
4. A square	is a rectangle	whose sides are equal.
5. A square	is a parallelogram	having equal sides and right angles.
6. A square	is a quadrilateral	with equal sides, the opposite sides parallel, and the angles right angles.

It may be noted that in each of these definitions, we have first named the thing to be defined; next we have classified it; and lastly we have distinguished it from others of its class. Thus in the first definition we named the thing to be defined, "a quadrilateral," then we classified it into the class "plane figure," and lastly, since not all plane figures are quadrilaterals, we distinguished the quadrilateral from all other plane figures, by stating that it has four sides.

We have given three definitions of the square. In the first the square is classified in the narrow class "rectangle"; hence the differentiating characteristics are few; namely, "equal sides." In the second case it is classified in a larger class, "parallelograms"; hence more differentiating characteristics are necessary to set it off from all other parallelograms; namely, "equal sides and right angles." The "right angles" are included in the classification "rectangle" in the first case. In the third case the square is classified in the broad class "quadrilateral"; hence still more differentiae are required; namely, "equal sides, the opposite sides parallel, and the angles right angles." No doubt we are ready to concede that the first definition of the square is the best of the three, if the class "rectangle" is known. If it is not known, then the next narrower class, "parallelogram," is to be preferred, if it is known; for the narrower the class, the simpler the definition.

Summarizing now, we have the definition form: —

Principle. — A definition is a statement that (1) names the thing to be defined, (2) classifies it into the smallest familiar class, and (3) distinguishes it from other individuals of its class.

It is to be noted that the definition is a mere abstraction, existing only in imagination. The moment we have a real rectangle or square, that moment we have paper or wood or some varying element, or elements. Without

imagination, therefore, we could not conceive a definition. So, too, without a rather wide experience from which to isolate the essential elements, we could not formulate a definition; hence, as already pointed out, it is unreasonable to expect young students to define. Moreover, in framing a definition, it is of the highest importance that the teacher use ample material to identify all the common elements and to exclude the varying elements.

Principle. — In framing a definition, sufficient material should be used to identify the common elements, and to eliminate the varying elements, of the individuals included.

The teacher will find the definition form a useful guide in defining; and with a little practice students readily come to adopt it, for the reason that it helps them think out a definition. It also serves as a standard for judging definitions. The ability to define is an excellent test of the scientific status of mind.

Textbooks very commonly reveal weak efforts at defining. Thus the grammar text may tell us that "A subject of a sentence is that of which something is said." If we attempt to apply this definition, we can see the deficiency. Thus in the sentence "A stone is heavy" the thing of which something is said is, a stone. A stone cannot be the subject of a sentence, for the reason that a sentence is made up of words. The words "a stone," and not a stone, constitute the subject of this sentence.

There is a wide difference between a stone and the words "a stone."

Similarly, the definition of the sentence predicate, "A predicate of a sentence is that which is said of the subject," is not true. Both of the definitions offered are taken from a textbook on grammar; yet both definitions are untrue, for the reason that they classify badly. The subject of a sentence, as well as the predicate of a sentence, cannot be other than a word or words; hence a definition of either must classify it accordingly. The subject of a sentence is a word or group of words which indicates that of which something is said; and the predicate of a sentence is the word or group of words which express what is said of the thing indicated by the subject.

There is another caution which should not be omitted here, and which reveals the bad defining common in textbooks. We have seen that a definition gives only the common elements of the individuals included. It follows, therefore, that any distinguishing characteristic stated in the definition must be true of all individuals included under the definition; in brief, a definition must unify all individuals included by it. Thus it is evident that a definition of the square must include nothing that is not common to all squares. Suppose we should define the square as an equilateral rectangle composed of wood, iron, or paper. Our definition would not be acceptable, for

the reason that the statement allows accidental elements to creep in and break up the unity. Whatever the definition states must be true of every individual included under it, and there must be no disharmony.

Principle. — A definition must unify all individuals included, and exclude all disharmonizing elements.

Such a definition as "A man is a male human being with red hair or blue eyes or dark skin" is untenable. So, too, is the definition "A verb is a word which expresses action or being or state." If some verbs express action, some being, and some state, we do not object; neither do we object if some men have red hair, some blue eyes, and some dark skin. But we cannot admit these accidental elements into our definitions. These definitions fail to unify. There is but one thing that all verbs do in common, and that is, they assert relation. A verb may therefore be defined as a word which asserts the relation of thought subject and thought predicate.

The safest plan in all definition work is to lead the child to formulate his own definitions out of his experience, as was just indicated in framing the definition of "definition." If teachers were to study the results of giving definitions ready made, by book or otherwise, they would soon come to have little confidence in ready-made definitions. The only definition that the child comprehends is the definition that represents his own experience with the thing defined; and it is a mistake to have him attack

formal definitions until he is able to derive them from his growing experience.

Principle. — The only definition that counts is the definition that is derived from the child's own experience; and as the child advances through the grades, he is ready to handle formal definitions when he can derive them from his experience.

We have now seen that the young child is unable to handle the formal definition in school for the reason that his imagining ability is weak, and that it can grow strong only through a widened experience. This is quite contrary to the traditional belief in the child's imagination. The fact that children are full of impulses and feelings, with little power of control, makes them very ready to read their impulses and feelings into things. Thus the boy feels that he must have a horse, and forthwith he reads his feelings into a broomstick, and lo, a horse. So, too, the girl reads her feelings into a wretched rag, and that rag becomes at once a doll, rather, a living child. No one would thoughtfully take all this for strong imagination. It is rather imitative and reproductive, with some glimpse of higher things beyond. It is true that the child is very imaginative, for his imagination plays upon his surroundings much of the time; but we must not mistake this for strong imagination. It is rather the promise of a strong imagination. We should hardly expect the case to be otherwise, for it would seem that the strongest imagina-

tive efforts of the childish mind would have to be of the reproductive type to begin with. The reproductive imagination must always precede the constructive. Until a mind can reproduce its experience freely, it cannot build with it.

Principle. — Contrary to tradition, the child is not strongly imaginative; and what imaginative power he has is chiefly of the reproductive type.

The fact that the child has but feeble power of constructive imagination makes justifiable the use of the myth and the fairy story; and were we to concede the child a strong imagination, we should have no adequate defense for using these unrealities in the school. No one should decry the myth. It is unreality, for it deals with things that do not really exist; yet the value of the myth and the fairy tale lies in the fact that they lead the child to construct these unreal things out of his experience. This is exactly what all invention, all progress, means. Before the dynamo existed as reality, it had to be constructed by a strong imagination, working on a rich mechanical experience. Before the printing press, the arc light, the wireless telegraph, and all other inventions existed as realities, they had to be constructed by imagination, working on past experience. Exactly this is what the myth and the fairy story demand of children. No one should fear the unreal, for all progress is born of unreality. The real is already with us; and it is what

we have not, the unreal, the imaginary, for which we strive. When the teacher, without stuffing the child to the point of weakening, utilizes the unreal fairy tale to impel the childish imagination to construct the unreal, she is fitting him for progress; and the myth and the fairy story, not overdone to the point of mental colic, with its sleepless nights, have paved the way for many an inventive mind.

Principle. — Since the child has but feeble power of constructive imagination, the myth and the fairy story are justifiable means of impelling him to construct the unreal out of his real experience.

We saw in our study of the child's ability to think number ideas and definitions, that it is only a wide experience, operated on by the law of varying concomitants, that gives the child the ability to isolate the idea, a thing of mind, from the real, or objective, thing. When the child has freed an idea from the real, he has a mental content at once new and strange to him. Children who in this mental state attempt to express themselves to others are commonly mistaken for "liars." Thus a child crossing Chesapeake Bay on a steamer, after sitting spell-bound for some time looking into the water, ran suddenly to his mother, and exclaimed, "O mamma! I just caught a big fish, bigger than you are! I was holding my foot in the water, and a great big fish caught hold of my toe, and I kicked him up on to the boat, and the men got him

and ate him up !” That unknowing mother was shocked, and said, “Oh, my child is becoming a fearful story teller! What shall I do? What shall I do?”

Now let us inspect this child’s mind, and see if he is to be branded a prevaricator. We will readily concede that the child was thinking intently, and that in his imagination a big fish came up and caught his toe; and that in his imagination an impulse kicked the fish out on deck; and that in his imagination the men seized the good big fish, and appropriated him in the usual way. All these conceptions are but the simplest alterations of the child’s experiences; and without fishing experiences, he never could have constructed these fishing ideas.

The child probably started off with the impulse to put his foot into the water. He had put his foot into water before. Then came the thought of danger to his foot, since fish are in the water; and fish have perhaps nibbled at his toes in time past. This is big water, bigger than he has ever had his toes in; hence the idea of the big fish. The little fish that have nibbled at his toes in time past were too small to take a good hold of his toe, the bait; but this big imaginary fish can take hold, does take hold, indeed, and then comes the effort to land him. The effort succeeds; and the usual sequence, the consumption of the fish for food, is less interesting. The interest here is chiefly in outdoing the big fish, and so the process of preparing and eating the fish is abbreviated.

All this imagining is so close to real and interesting experience that it is vivid and real to the child ; so real, indeed, that the child may hardly be able to distinguish it from reality. If, now, the child in this vivid dream is unable to distinguish vivid imaginings from reality, then he is in the condition that we all find ourselves in when we are not sure whether we dreamed a thing or whether it really happened.

Now comes the effort to tell the experience. Whether or not the child was unable to distinguish this vivid imaginary experience from reality, the case is not changed when he comes to tell it to others. The significant fact is, he has isolated a chain of ideas, at once unnamed and strange to him ; namely, the idea of bait — not simply worms, but any flesh with which to catch fish ; the idea of fishing rod — not simply a wooden pole, but his leg now answers ; the idea of landing the fish, not simply on land, but to a place of safety ; and the idea of fish as food, not simply for himself, but for any one. Now how can the child tell all this new and strange experience ? He must tell it ; indeed, he does tell it, and that, too, in the only way he can ; namely, in the language at his command. Could we expect the child to say, “Mamma, I was just imagining, what if I were to put my foot into the water and a big fish should come up and take hold of it for bait, and I should use my leg, pole-like, to land him on the deck of the boat where we could get him and eat him

for food?" No, no. The child lacks the necessary speech; but he has the thought, and he does all that he can do when he tells it in his realistic way, not "I imagine," but "I caught."

The child was not a liar, but a progressive discoverer of ideas. It was not a flogging that he needed, but some one to understand him and assist him. A more knowing mother would not have reproved the boy for "lying," but she would have said, "My little boy doesn't mean to tell me that all this really happened; but he should say, I was just thinking, what if it should happen." Then the mother should have had the boy use her better speech.

The liar is one who distinguishes the idea, the unreal, from the real, but immorally substitutes the idea for reality. Since children are often unable to make this distinction, or if made, then unable to find appropriate language to express it, we are sadly in error when we mistake them for "born liars." Every child meets both of these mental states, and incidental instruction has a duty in helping the child safely through.

Lack of speech cripples any thinking process; and only a strong-minded adult, a Shakespeare, can move forward by breaking the bonds of speech.

Principle. — When the child becomes able to think an idea free from the real, he is unable at once to find language to express his new mental state, hence he needs assistance.

We may discern a danger here. While the child is not a "born liar," as some have named him, there is a possible danger that he may become a liar. If he freely communicates his unreal contrivances as real, and finds the practice useful; that is, entertaining without reproof, he may become a liar. The hope here lies in the chances of failure to be believed, plus a candid interference. No child should be allowed to proceed with his unreal contrivances to the point of entertainment.

Principle. — If the child is allowed to freely communicate his imaginary contrivances as real, he may find the conduct useful and hence become a liar.

We should not fail to discern the pleasure which a mind instinctively finds in its power of imagination. The distinguishing characteristic of the imagining function is freedom; for the imagination represents the free play of impulse upon past experience. Mind universally finds satisfaction in its own freedom; hence the child mind, dominated as it is by impulse and feeling, instinctively loves to toy with the little imaginative power which it can command, and so it projects its own feelings and impulses into objects. The child is therefore very imaginative; but this does not mean that he is strongly imaginative. Now this tendency of the child to project his own impulses and feelings into things, as is seen in the boy astride of the broomstick, must fade away as experience teaches him how to control his impulses and feelings;

hence it is not nature's plan to have the boy become a liar.

Perhaps we should not close the treatment of methods of dealing with the imagination without specific reference to the extreme value of the imagining power.

Mind is confronted by a world of objects which seems real to us; and yet this reality is only in appearance, for no one of those objects can long endure. That pocket-knife, that garden hoe, that home, indeed, that very tomb and tombstone, are not enduring, for time will obliterate them; the ages will leave no trace of recognition. What we by custom call the real world is, after all, then, not real, for it is changing; and anything that is changing is unreal. The things that we see, hear, feel, taste, and smell are therefore all unreal; for they are not enduring, not eternal. Now, in that pocketknife, there is an idea which created it, and the pocketknife reveals it. Had no mind ever conceived a pocketknife, we never could have had a pocketknife in the world. To understand, to know, the pocketknife, the mind must penetrate to the idea which created it; and every blade, every rivet, the shape, the size, the weight, are all determined by that creative idea, and they all reveal that idea. Destroy that pocketknife if you will, and the idea that created it will create more; that is, the idea will cause the pocket-knife to reappear; but destroy the idea, and we can have no more pocketknives. Thus it is the idea, and not the

real, that is the enduring reality. The idea, then, is the important thing, the enduring thing, in everything; while the thing that appeals to the senses cannot endure. "Look not at things which are seen, for the things which are seen are temporal, but the things which are not seen are eternal." Stated less beautifully, but perhaps more clearly, this educational law becomes :—

Principle. — The idea is the abiding reality; the real is subject to change, hence unreal.

Every object existing in the world first existed in idea. Had mind never conceived the Brooklyn Bridge as idea, it never could have existed for the senses. Back of every object is an idea which is creator indeed; and back of all the world, the universe of worlds, is the Ultimate Idea, the Ultimate Reality, that has created all. Every object, therefore, reveals mind, the mind that created it and understood it; and to learn the object, to know it, we must penetrate to the mind within the object. Man may recognize the butterfly when he sees it; but if he would know it in reality, he must see it as the creator saw it. So, too, if we would know the "Stamp Act," the "Boston Tea Party," the "Bill of Rights," the Constitution, the alphabet, anything indeed, we must get beneath the outer cloak and into the ideas that created them.

The reality of a thing, then, never appears to the senses; but the thing embodies the reality, the idea, the

meaning. We must come into sense contact with objects to get experience. Imagination reproduces that experience at will; and an image is a more or less faithful mind-copy of sense experience. With wider experience we get a variety of images of any given sense contact, and the accidental and varying elements weaken out, while the enduring, the essential, elements grow strong in accordance with the law of varying concomitants. These enduring elements of experience constitute the idea, the meaning of the object; and with these essentials in our possession we may create objects by working in accidental and varying elements. No two men would make two pocketknives exactly alike; yet both would reveal the essential elements of pocketknives. Experience has given each of them the essential elements, the idea pocketknife; otherwise neither could define and make a pocketknife. Whether there are two blades or three or five, is of little consequence. It could be a knife if it had but one. In any case there must be a blade, inclosed in a handle of size suited to the pocket.

Thus it is that the imagination enables us to isolate the enduring, the agreeing elements, out of experience; and we are never satisfied with an experience until we can identify it with past experience; that is, until we can see its meaning, its agreement with past experience. Throughout life we go on remolding our experience, for we would have everything find its place in a systematic whole,

a universe. Chaos sets us crazy, and we cannot rest till we see things in agreement; for unity is the fundamental law of mind. This native impulse to find unity is what we have already called the curiosity instinct; and it is this impulse, pushing us along to find a universe, that is the root of our belief in God and an ideal world. An ideal world to any mind must be a world in absolute harmony, for unity is the fundamental law of mind.

Principle. — Unity is the fundamental law of mind; and the instinctive craving after unity is curiosity.

4. METHODS OF DEALING WITH REASONING

We have seen how the mind unifies its experiences in deriving ideas. Indeed, we have found that unity is the fundamental law of mind. We may now inquire how the mind proceeds, according to its unifying tendency, to unify its ideas into larger systems; and we would discover, if possible, the methods of dealing with mind in its further unifying processes.

Suppose the mind has isolated two ideas, "house" and "red," from its experience. It may now meet an experience in which these two ideas unify; that is, it may come upon a red house. The discovery of this relationship, of this unity, is the mind process which we call thinking; and the thought may be expressed in the sentence "The house is red." Thinking may therefore be defined as the unification of ideas.

In a similar way, the mind proceeds to unify its thoughts. Thus we may have the two thoughts:—

“A lion is a four-footed beast.”

“All four-footed beasts are quadrupeds.”

From the fact that these two thoughts have a common element, “four-footed beast,” the mind quickly unifies the two thoughts and draws the conclusion, —

“The lion is a quadruped.”

This process is called reasoning; and reasoning may be defined as the unification of thoughts.

The psychologist discerns two types of reasoning, one of which is called induction, the other deduction.

Inductive Reasoning

Suppose a man meets a swan, and among other things he notes that the swan is white. He meets a second swan, and again, among other things, he notes that the swan is white. He now begins to suspect, perhaps, that all swans are white. He meets a third swan, notes that it is white, and his notion that all swans are white is strengthened. He goes on with his experience, and finds a fourth, a fifth, a sixth, and so on, to the twelfth swan, all white. Ere this number is met, the mind has unified the individual experiences into the all-embracing notion that all swans are white. This process of unifying individual thoughts, or notions, into an all-embracing general thought, or notion, is called induction, or inductive reasoning.

Deductive Reasoning

Granting now that the man has reached the conclusion that all swans are white, we may see how he will use it. All his past experiences with swans have revealed, among other permanent elements, the permanent element whiteness; hence, according to the law of definition, whiteness is a part of the past experience, a part of the meaning, which he now reads into swans. When, therefore, he hears that John Brown has a swan, he at once apperceives the swan in the light of his past experience, and to his mind John Brown's swan is white. This process of thinking an individual notion in the light of a general notion is called deduction, or deductive reasoning.

Both these forms of reasoning are very common in life. Thus a child repeatedly sees clouds form and rain follow, and he inductively comes to the conclusion that clouds bring rain. He meets a few bees, is stung a few times, and he comes to the conclusion that bees are dangerous. He tries his hand at milking cows, is kicked a number of times, and he comes to the conclusion that cows are dangerous. He sees a number of buttercups, finds none that are not yellow, and he comes to the conclusion that buttercups are yellow. He disobeys his parents a few times, is punished as many times, and he infers that disobedience brings pain. So, too, the crude-minded adult, who meets bad luck a few times after "turning back to the house,"

concludes that turning back brings bad luck. The good luck "new moon over the right shoulder," and the bad luck "new moon over the left shoulder," the unlucky number thirteen, the lucky finding of a horseshoe, all superstition, you say, arose through induction.

On the other hand, the moment we arrive at a general notion, we proceed to apply it. Thus the child who has concluded that bees are dangerous avoids bees. For a similar reason he avoids cattle, avoids disobedience, and so on, through deductive reasoning. Everywhere, indeed, we find these two processes going on together. Either, in fact, is useless without the other; for a general notion that is never applied to the experiences of life is useless; and one that has no experience basis, but is simply "received" from others, is likewise useless. The fact is, without some experience basis, a general notion cannot be received; for as we have already seen, it can have no meaning.

5. THE FORMS OF INSTRUCTION

(Several of the so-called "methods of teaching" have come up for necessary treatment in the preceding pages. Since we are now to give a systematic treatment of the purely formal side of instruction, the methods which have already been treated will be but briefly referred to, each in its order.)

All instruction is a process of giving impersonal ex-

periences, and we may give these experiences in either of two ways; namely, (1) we may tell the impersonal experience directly, having satisfied ourselves that the child has an ample supply of ideas in readiness to give meaning to the impersonal experience, or (2) we may develop the experience at first hand with the child, and test him throughout the process to find whether or not he has a stock of ideas sufficient to interpret the impersonal experience which we are attempting to give him. The first process has been called the telling method; the second, the development method.

I. The Telling Method

The telling method, as the name indicates, is the method in which the teacher tells the child directly the fact to be taught. Thus, if the child does not know the multiplication fact 3 times 4 are 12, the teacher may tell him the fact outright; if he does not know how to draw a scalene triangle, the teacher may tell him by "showing" him; or if he is unable to spell a word, or to give a date, or to give a grammatical form, or to discern the function of a physiological organ, the teacher may tell him. If the child succeeds in getting the impersonal experience to be taught; that is, if he really has ready the ideas necessary to give meaning to the impersonal experience, and actually uses them to advantage, then this method may prove to be the easiest and the most rapid of methods. But we

have already seen that meaning is uncertain and elusive ; and though the teacher may tell a fact of experience, it may call up no ideas in the child mind, or it may call up a group of experiences that give a wrong meaning.

Principle. — The telling method of teaching is easy and rapid, but unreliable.

In spite of the fact that the telling method is not as reliable as we would have it, there are nevertheless multitudes of facts that must be told. Not every fact can be developed ; and even if such were the case, life itself is too short to allow the school to develop all the impersonal experiences that it would give the child. With a reasonable assurance that the right meaning will be forthcoming the teacher may and must tell many facts. Whether a given fact of experience should be told, or whether it should be developed out of the child's experience, is a problem that must fall to the teacher's judgment. No law can be specific here. The question to be answered by the teacher is, which of the two methods is better suited to reach the given end under the conditions at hand ?

Principle. — The problem of determining whether a given impersonal experience should be taught by the telling method or by the development method must be left to the teacher's judgment as to which method is better suited to reach the given end under given conditions.

The Lecture Method. — The use of the telling method in giving a more or less extended bit of experience is known

as the lecture method. With students of rather mature experience, such as we expect to find in the college, this method may succeed. So-called "talks" on topics with which students are already more or less familiar may be justifiable in the upper grades and in the high school; but in the primary school, and indeed throughout the elementary school, generally speaking, the immature experience of students renders this method very unsafe.

Principle. — The lecture method is justifiable in dealing with students of mature experience in the subject matter treated, but unsafe with students of immature experience.

The Textbook Method. — The textbook may be reasonably conceived as a written lecture, and the out-and-out use of the textbook is thus the telling method. Books may be of extreme value; but as an actual fact the value of books is fearfully weakened by the memorizing greed. The practice of grinding the textbook into memory is perhaps the most unfortunate practice known to present-day methods, yet we find it amazingly common in our schools. History, geography, grammar, physiology, and so on, are fearfully devitalized by the memory greed. As we note elsewhere, it seems to be a law of teaching, that memory work is called in whenever and wherever a teacher's vision is clouded. If no definite value is discerned, then the memory, earthworm-like, is set to devouring whatever comes in the way. The amazing amount of stuff which forgetfulness has to ex-

crete keeps us in a kind of mental Bright's disease, and cheats us out of our rightful vigor of thinking. Thorndike offers a law which is fitting here, and which, with slight change, we may do well to accept:—

Principle. — Consider the text a guide to be unslavishly followed, not an authority to be memorized.

The Illustrative Method. — The illustrative method, already treated in connection with the objective method, is commonly used along with the telling method. This practice is commendable; for the illustrative material may be made to concrete the ideas, and thus touch experience.

Principle. — The illustrative method is a worthy ally of the telling method, for the reason that an illustration is an appeal to relevant experience.

The fact is, the telling method could be put to far better use than it now is, if teachers would break it up with illustrations, in order to render the subject matter more concrete; that is, filled with the child's own life experiences. Many a good talk and many a good sermon have failed to arrive, because too abstract. Again we must note that the meaning which a mind reads into an abstract statement is uncertain; and it varies with the experience of the hearer. If we would make sure that the intended meaning is present, the concrete is our hope. The teacher's daily reminder should be, not "Master, remember the Athenians," but —

"Concrete! Concrete! Concrete!"

Principle. — Preaching or good talk in the abstract is of doubtful value; it is the concrete that knits a fact into life experience.

II. *The Development Method*

Quite independently of persons at hand to tell an individual some given fact of experience, that individual may proceed as best he can to construct his own method, and thus make his own experience. Or, with some guidance from others, an individual may proceed and extend his experience. Either of these plans of procedure represent the laboratory method already treated in connection with the objective method. The laboratory method derives its name from the fact that it is the method commonly used in laboratories. In such procedures, it is to be noted that the individual feels the need of some bit of experience, and his problem is to find or make that experience. He gathers together whatever material he feels is suited to his purpose, and then proceeds either "hit or miss," or else by setting up one hypothesis after another and working until they are established or broken down.

The advantages of the development method are quite evident. An individual who has found his own method of deriving the area of a triangle or circle or trapezium, or who has made his own multiplication table or history outline or rule or definition, stands at once in the following

advantageous positions: (1) he is learning the valuable lesson of self-reliance and independence, (2) he knows how to use the subject matter, because he created it, and he can change it to suit new purposes; (3) the subject matter is well rooted in memory, for he has thought it out of his own experience; and even if lost, he can re-create it.

On the other hand, the developing method is slow, and often tedious and wasteful. Especially is this true when no guidance is given. Life is actually too short to get more than a fraction of the course of study in this way. Then, too, any fact reached by this method must be checked up by a wide experience, otherwise it is not safe from error. By way of summary, then, we may lay down the following: —

Principle. — The development method is a reliable method of teaching, but it is too slow to be of universal use.

The effort to assist the child in using the development method easily goes wide of the mark. If too little assistance is given, then the child's time and efforts are easily wasted; yet too much assistance is perhaps the more common weakness. In her solicitude that no time be lost, the teacher readily directs questions toward every little step; and so we very commonly find what has been called "spoon feeding." We shall later, in treating methods of controlling will, lay down a principle for guid-

ing the teacher in giving assistance ; and the reference to it at this time is significant.

The Forms of Development

The two types of reasoning have given their names to two time-honored methods of teaching ; namely, induction and deduction. The fact that the psychologist discerns that we cannot sharply separate inductive and deductive processes of reasoning is not to alarm the teacher. It is true that there is no such mental process as pure induction, neither pure deduction. It makes no difference whether it is the first or fifth or fiftieth swan which an individual sees, he views it in the light of general notions of some kind already formed from other experiences ; otherwise the swan could have no meaning to his mind. In the deepest process of induction, then, deduction enters at every point ; and since we want every experience interpreted in the light of unified previous experience, we do not want pure induction, even if it were possible.

On the other hand, a man may have seen either few or many swans, yet the next one he sees will have something to do in the way of strengthening or of limiting his general notion ; that is, it will unify in some degree with previous swan experiences. Thus induction is present in the most profound case of deduction. Since the fundamental law of mind is unity, we do not want this changed, even if possible.

Induction and deduction are ever coexistent processes, then, and we cannot have one without the other; yet the fact that the teacher starts out with a group of individual experiences from which she purposes to lead her students to derive a general notion, is sufficient reason for naming her method induction. So, too, the fact that she plans a lesson in which the general notions, already formed, are to be applied to new experiences, is adequate ground for naming her method deduction. Thus it is that these terms continue to be used in the theory of teaching; and there is no valid reason to hope for their disappearance.

A. The Inductive Method

We may do well first to present the inductive method in concrete. — Suppose a sixth-grade teacher wishes to derive a convenient rule for squaring two-place numbers. An inductive procedure would move somewhat as follows:

1. *Preparation.* — A motive is the first thing needed; and the teacher may set out by trying her class on the usual multiplying-out method of squaring numbers, say, on 67 and 86. After suggesting that this method is rather too heavy to be rapid in handling the ever-recurring two-place numbers (thus revealing need), the teacher may at once set the definite problem by the motivating appeal: —

“I wonder if we can’t readily discover an easier method of squaring two-place numbers.”

2. *Presentation.* — The teacher writes on the board the form 23^2 . Now comes a trial of her skill in using that vital instrument of teaching, the question.

1st question. — How many tens and how many units in 23 ? *Answer.* — Two tens, and three units.

2d question. — Suppose we take the 3 units away from the number 23 ; what the remainder? *Answer.* — 20 .

The teacher now writes on the board, —

$$23^2 = 20 \times$$

3d question. — Suppose we now add 3 units to the number 23 ; what the sum? *Answer.* — 26 .

The board now shows, —

$$23^2 = 20 \times 26 +$$

4th question. — How many units did we take away from the number 23 in this instance (pointing to 20)? *Answer.* — 3 . How many did we add to the number 23 in this instance (pointing to 26)? *Answer.* — 3 .

The teacher writes as she proceeds, and the board now shows, —

$$23^2 = 20 \times 26 + \overline{3 \times 3}$$

5th question. — If we now multiply the 20 by the 26 , then add 3 times 3, what the result? *Answer.* — 529 .

The board now shows, —

$$23^2 = 20 \times 26 + \overline{3 \times 3} = 529.$$

The teacher now directs the class to square 23 by the

multiplying-out method, and then, pointing to the board, asks the —

6th question. — Is our answer 529 right or wrong?
Answer. — Right.

We now have one individual case of squaring numbers by the short method; but it will take several others before the rule can be derived. The teacher therefore proceeds, questioning each case through as before, until the board shows something as follows: —

$$23^2 = 20 \times 26 + \overline{3 \times 3} = 529.$$

$$31^2 = 30 \times 32 + \overline{1 \times 1} = 961.$$

$$42^2 = 40 \times 44 + \overline{2 \times 2} = 1764.$$

$$55^2 = 50 \times 60 + \overline{5 \times 5} = 3025.$$

$$67^2 = 60 \times 74 + \overline{7 \times 7} = 4489.$$

$$86^2 = 80 \times 92 + \overline{6 \times 6} = 7396.$$

3. *Comparison.* — These six individual notions of squaring numbers are probably deemed sufficient; and the teacher proceeds to question and point through each case in comparison, as follows: —

How many tens in 23? *Answer.* — 2. How many units? *Answer.* — 3. How did we get the 20? *Answer.* — We took away 3 from the 23. How did we get the 26? *Answer.* — We added 3 to the 23. What is the product of 20 and 26? *Answer.* — 520. What does the first 3 represent? *Answer.* — The 3 which we took away from the number 23. What does the second

3 represent? *Answer.* — The number we added to the number 23. What is their product? *Answer.* — 9. What is the sum of 520 and 9? *Answer.* — 529.

Each case is followed through in this way, for the purpose of discovering the unity of processes.

4. *Generalization.* — The questioning through the individual cases must be continued till the unity of the processes is discovered. The teacher then asks, "Who can tell me how to square any two-place number?" Ample time is now allowed for all to get the unity of processes into form for statement; then some one of the doubtful students is called upon for his statement. If he is in error, his statement will probably reveal whether he has failed to discover the unity, or whether his failure is in language. If the former, he is directed back to the individual cases. If the latter, then the teacher must judge whether the statement shall be criticized, or whether another student is to be called on for his statement. After several statements have been given, the best statement is chosen, either by the teacher or by vote of the class; and with slight changes in wording, perhaps, the rule is finally written as follows: —

Rule for squaring Two-place Numbers. — "To square a two-place number, multiply the number minus the units by the number plus the units, and add the square of the units."

5. *Application*. — The rule is at once applied to several numbers, such as 22, 43, 83, 97, to make sure of ability to handle the rule as stated; then it is carried over into some real life problems. To illustrate, — “Your next flower bed is to be made 24 feet square, with one plant to the square foot. How many plants will you need?” Text-book assignment may be made to give further application, or the teacher may proceed to show that the new process of squaring numbers is reducible to the familiar multiplying-out process.

It is at once evident that up to and including the statement of the general notion, or rule, the movement of mind here is from the individual notions of squaring numbers to the general notion. This is the explicit process, hence we may call it induction; and we may call the method used inductive. The application of the rule is clearly deduction.

The Formal Steps of Induction

The Herbartians have long insisted that the inductive method (rather the inductive-deductive method, since the application of the general notion is deduction) moves through a form which reveals five steps. These steps have been marked in the lesson given, and they are in order: —

- | | |
|-----------------|-------------------|
| 1. Preparation | 3. Comparison |
| 2. Presentation | 4. Generalization |
| 5. Application | |

The first step is called preparation, for the reason that the teacher here aims to prepare the child mind to receive the new experience (1) by calling up whatever ideas are needed to give meaning to the impersonal experience about to be presented, and (2) by revealing to the child the problem (the so-called "aim" of the lesson) at hand. It is in this step that the motive must be set to work. We have seen that every lesson must have its motive; and no suitable motive can be set until the child discerns what his need is, hence what the problem is at which he is to work.

Principle. — Every lesson must reveal a problem to the child before he can find a motive.

No teacher should believe that she must always have a formal statement of a so-called "lesson aim." We simply want the child to see his problem. If a mere statement of "aim" will reveal the problem, then we may have the aim stated; but we are not to rely on this formal procedure. Neither should any teacher believe that she must call up in the preparatory step all of the ideas needed to interpret the lesson all the way through. We must have sufficient ideas in readiness at any step to keep the process moving intelligently, and other ideas may be brought in as needed. A mere review of the previous lesson may call up ideas enough to start with; but here again the teacher's judgment must determine.

The second step is called presentation, for the reason

that it is here that the material, the facts, or individual notions are presented. The lesson we have already given is intended to show how carefully the teacher should proceed in handling the individual notions, so as to bring out the essentials, the elements common to all of them; for it is the group of common elements which is to become the generalization. All definitions are generalizations; hence our principles governing the handling of the defining processes are applicable here. We may again accept Thorndike's lead: —

Principle. — The crucial point in inductive teaching is the selection and handling of individual facts so as to reveal the common elements that are to constitute the general notion.

Caution should here be given that an order of presentation which is perfectly clear to an adult mind may be unsuited to the child mind. The logical arrangement of subject matter is one thing; the psychological arrangement may be quite another thing. It would be perfectly logical to begin history study with the earliest of ancient history, and proceed chronologically down to the present time; yet for a child this would be impossible, for he must have an experience basis to begin with, and this he can get only from contact with his own environment. The child mind simply cannot get history by a strictly chronological (time-logical) arrangement, hence such an arrangement is not psychological to the child; that is,

not arranged to fit the child mind. So, too, it would be perfectly logical to begin the study of geography with the world whole, the globe, proceeding in an orderly way down through the continents to state, county, and finally to the home; but since the child experience is not sufficient to enable him to comprehend the globe at the start, such a procedure would not be psychological to the child; that is, not suited to his mind. In the given lesson it would have been logical to have given the numbers in the order, 29, 38, 46, 52, etc., but since 29 would be hard for the child to begin with, this presentation would not have been psychological. The logical arrangement means, essentially, the way an adult mind would think subject matter. The logical arrangement is therefore likely to be psychological to the adult; but if the child mind is unable to think things that way, then the arrangement, though logical, is not psychological to the child.

Principle.—The logical presentation of subject matter is acceptable, so long as it is psychological.

The third step is called comparison, for the reason that the individual facts are here compared for the purpose of finding the common elements which are to become the generalization. It must not be assumed that this step is to be sharply separated either from the one preceding or from the one following. The unifying activity of mind is at work the moment two individual notions are handled, and it continues until the unity, the generalization, is fully

established. Sometimes the student will have his generalization isolated even before the presentation is completed. In other cases, the individual facts will have to be gone over with the greatest care, in the effort to isolate the common elements. The latter is true of the lesson given. Common elements are isolated in accordance with the law of varying concomitants; and just how many individual facts are needed in the presentation and comparison must be left to the teacher's judgment. A little experience here will enable the teacher to discern, with a fair degree of certainty, when the children have had a sufficient number of individual facts; but if the lesson is to be a development lesson, and not actually a telling lesson, the teacher must not allow a quick child to state the generalization before the slower ones have reached it.

The fourth step is called generalization, for the reason that here the common, or general, elements that have been isolated by comparison are unified in a statement appropriately called the generalization. This general statement covers all the individuals examined. The generalization may be a principle or a rule or a definition. As we have already seen, the teacher must allow reasonable time for all the members of the class to get the generalization, before any one is allowed to state it, if the advantages of the development lesson are to be secured. It has already been pointed out that a generalization should be first stated in the child's own language, thus

making sure that he has it ; but later it may be reduced to a more suitable form that means the same thing to the child. The practice of having several students give statements, and then choosing the best one, to be remolded if necessary, is commendable.

The fifth step is called application, for the reason that here the general notion which has been reached is applied to other individuals, in the hope of fixing the ability to use the newly acquired possession. The individual facts selected for the step presentation are usually selected on the basis of clearness in revealing the common elements ; but in the step application, the effort should be rather to get the general notion knit into the varied experiences of life. It is the teacher who knows the lives of her children who can show her prowess here. Not every problem that will lay hold of the life of the rural child will do for the city child, and not every problem that interests the boy will interest the girl, and so on ; yet we must have problems that touch intimately the lives of the children.

It must be conceded that the inductive method is slow, though it reveals, in vital ways, the values which we attributed to the development method. Perhaps we may lay down a principle for induction that will give a little more definite guidance for this form of development than we have yet given. Since the method is genuinely educative, yet slow, it is evident that only the most important general notions should be reached through the

inductive method. But the teacher will also find some very important general notions, such as the conception of the earth's rotation, the molecular theory, and so on, that are too difficult to derive out of the child's limited experience. The inductive method should not be attempted, therefore, in teaching them; but the telling method, reënforced by such experience as may be at hand, is advisable. So, too, a rule or a definition that counts only for the time being should be told. Stated positively rather than negatively:—

Principle.—Those principles, rules, and definitions which can be reasonably derived through the child's limited experience, and which are highly significant, should be taught by induction.

The Lesson Assignment

The step application readily suggests the lesson assignment, since the assignment is commonly the continued application of general notions reached in the class. If the assignment is prepared for by the development of general notions in the class, then the mere designation of the work is sufficient, unless some difficulties are in sight. If trouble is foreseen, the teacher must prepare the child for it by giving him such assistance as appears reasonable.

Sometimes, however, new problems are to be raised for the assignment. If so, the teacher must satisfy her judgment that the means of solution are within reasonable

command of the class. Guiding questions may be raised, or references given, or both. The fact is, the assignment may require more time than the recitation; and whatever time and assistance are deemed needed should be given. In any case, a careful estimate of the time and the assistance needed to work out an assignment economically is mandatory; for we now have tremendous waste in unguided efforts at study.

Principle. — The lesson assignment should be made with careful estimate of the time and the assistance needed to work it out economically.

The great waste still evident in study, and due to the lack of intelligent assignment, is in turn due partly to the child's lack of motive, partly to poor reference materials, partly to lack of definite problems, partly to the fact that many children do not know how to study; yet we cannot get away from the fact that this loss is mainly and painfully due to the fact that our teachers do not clearly see the values that are to be reached, and so the children do not find them. When we have risen above the notion that the history text is to be committed in bits and recited, that the Constitution is to be memorized, that grammar is to be studied by committing and applying definitions and rules, that literature study is the committing and the dissecting of masterpieces to the end of "inculcating a love of good literature," that spelling is the memorizing of letter aggregations of words found in the

spelling book, and so on, we shall then be in a position to make better assignments of work.

B. The Deductive Method

We have already seen that deduction is the application of general notions to the specific problems of life. We should now see how this application is effected, the method of the process; and following our law that experience is the only teacher, we shall first see the method in the concrete. Logic has supplied us with the time-honored illustration of deductive reasoning, which is easily competent to give us our first glimpse of deductive method.

Problem. — Is Socrates a god or a mortal being?

Solution. — Major premise: Man is mortal.

Minor premise: Socrates is a man.

Conclusion: Socrates is mortal.

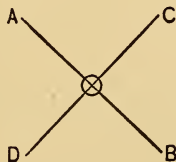
The major premise of logic is the general notion with which we have been dealing; and the minor premise is the individual notion. The solution of the problem is found by unifying the two premises and thus reaching the conclusion. This unification is the old trait of mind which we have seen all along; and as usual it comes about through the common element. In this case the common element of the two premises is expressed by the word "man." If we hold that man is mortal, and then concede that Socrates is a man, then comes the unification,

Socrates is mortal. The three steps of the process, taken together, are called in logic the syllogism.

Suppose we now shake off this antiquated problem of the Greeks, and apply the syllogistic solution to a present-day problem. Geometry is said to be our typically deductive science; we may try our case there.

Deduction in Geometry

Problem. — “If two straight lines intersect, the vertical angles are equal.” It should be noted that this statement represents a general notion, meaningless until experience puts it in the concrete. Here is our concrete.



Given. — Two straight lines AB and CD , intersecting in point O .

To prove. — The vertical angles AOC and DOB , also AOD and COB , equal.

Solution. —

Syllogism I. — Major premise: All straight angles are equal.

Minor premise: Angle $AOC + COB$, and angle $COB + BOD$ are straight angles.

Conclusion: Angle $AOC + COB =$
angle $COB + BOD$. (1)

Syllogism II. — Major premise: If the same or equal things be subtracted from the same or equal things, the remainders will be equal.

Minor premise: Angle $AOC + COB =$ angle $COB + BOD$. (1)

Angle COB is common.

Conclusion: Angle $AOC =$ angle BOD .
Q.E.D.

In a similar way it may be proved that angle COB is equal to angle AOD .

Deduction in Arithmetic

Suppose we now apply our deductive method to a problem in arithmetic.

Problem. — If 12 yards of gingham cost \$1.50, what will 10 yards cost?

Solution. —

Syllogism I. — Major premise: One yard of cloth costs $\frac{1}{12}$ as much as 12 yards.

Minor premise: 12 yards of gingham cost \$1.50.

Conclusion: 1 yard of gingham costs $12\frac{1}{2}$ cents. (1)

Syllogism II. — Major premise: 10 yards of cloth
cost 10 times as much as 1 yard.
Minor premise: 1 yard of gingham
costs $12\frac{1}{2}$ cents. (1)
Conclusion: 10 yards of gingham
cost \$1.25.

The next step in this problem is the checking up of the conclusion with experience. In this problem this may mean nothing more than the comparison of \$1.50 for 12 yards with \$1.25 for 10 yards. If the two compare favorably, the mind is satisfied; for the conclusion unifies with experience, and so the fundamental law of mind is satisfied.

In the usual work of geometry and of arithmetic, we do not see the syllogistic steps so clearly revealed; yet the mind proceeds this way, and if a full record of the mind's process were recorded, it would stand as indicated in the two processes just shown. Written work is usually an abbreviation of mind processes.

A little investigation of the two solutions will reveal the fact that the crucial point in syllogistic reasoning is the finding of the right general notion, or major premise, under which the individual fact, or minor premise, is to come. The teacher should lead the child to direct his search systematically, by teaching him to analyze the individual fact so that its essential elements may suggest the right general notion. Thus the student of geometry

learns to inspect the individual notion, the given intersecting lines in the given solution, and he finds two straight angles with an element, angle AOC , in common; and he thus discovers the two principles, the two major premises, on which to base his solution. So, too, the child in arithmetic analyzes his individual fact, 12 yards cost \$1.50, and sees the application of the principle for finding the cost of 1 yard; and this in turn leads to the principle for finding the cost of 10 yards.

Textbooks usually start the student by giving an illustration or two (as is seen in the analysis of sentences in grammar, or in the analysis of problems in arithmetic), and trust to the child to catch the idea and proceed. Sometimes the textbook suggests the appropriate general notion, as is common in mathematics and the other sciences. The teacher can and should improve such assistance by training the child to systematize his search by analysis and synthesis.

Principle. — The crucial point in deductive teaching is the direction of the pupil's search for the right general notion, and this is done by training the pupil to systematize his search by analysis and synthesis.

We are now in position to discern another principle covering both induction and deduction. We are in the habit of saying that induction begins with the individual and ends with the general. This is not quite true. It will be readily seen that when the individual has discov-

ered the law for squaring numbers, he at once better understands the squaring of individual numbers. It is for this purpose that the law was derived. So, too, a man who has formed a general notion "swan" knows more about any individual swan than he did before. No one ever met a general swan in his experience. It is always a particular swan that we meet; and it is the particular swan that we must know. No one ever met a general number to be squared, but always it is a particular number that we have to square. So far, then, as any mind is concerned in analyzing and comparing and isolating common elements, it is for the purpose of better understanding the individuals which are met in experience. A mind that has reached a general notion by induction could not stop with the general notion if it chose, for all the time we are dealing with individuals. First and last, then, our induction would know the individual; and so the inductive process really begins and ends with the individual. The end of induction is truly an enriched individual.

We are likewise in the habit of saying that deduction begins with the general and ends with the individual. This, too, is not quite true to experience. A man meets a given bird, reads into it his relevant general notion, and says, "This is a swan." He meets an individual problem in mathematics, applies his rules, his generalizations, and ends with a solution of the particular problem. He

meets an individual act, applies to it his general notion of right and wrong, and names the act accordingly. He awakes any particular morning, never a general morning, looks at his timepiece, and finds that it is his rising time, and acts accordingly. Thus it happens that we never actually begin with general notions anywhere in experience, but an individual is always the starting point of any thinking process; hence deduction, as well as induction, both begins and ends in the individual. That is, experience is derived from individual and specific sense contacts with the world about us, and all our thinking and reasoning about those contacts is for the purpose of guiding us in future specific contacts. Life problems are concrete, and all our knowledge is knowledge of individuals.

Principles. — Both induction and deduction begin and end in the individual, and all knowledge is knowledge of the individual.

Up to this point in dealing with the development method, we have proceeded as if all development were either inductive or deductive. It is true that if the teacher plans a lesson to deal with individual facts, for the purpose of arriving at a general notion, the movement which she has in mind we may call induction; and when she plans to apply the general notions already acquired to further facts of experience, the movement is what we have called deduction. Now it is not every development lesson that

is planned with the explicit purpose either to bring out or to apply a general notion. If not, then the movement is explicitly neither induction nor deduction. Caution is here given that we are dealing with the development method, and not with the telling method. Since all conventional symbols, such as the alphabet, figures, and arbitrary signs in general, cannot be developed, they must be taught by the telling method. So, too, the mere facts of history, as well as the facts of literature, must be taught by some form of the telling method. But since no isolated fact can mean anything in itself, but must have meaning given to it out of the mind's past experience, all teaching implies induction and deduction at every step.

While we must concede that all knowledge is the unity of the individual and the general, of fact and meaning, there is much development teaching in which the teacher is not expressly trying either to reach or to apply general notions. History, unfortunately, is commonly taught in this way; and so with literature; that is, most teachers of history and of literature are not clearly engaged in trying to reach the great truths of history and of literature, but their teaching only implies that they hope that in some undefined way the students are reaching them. Such methods of teaching always closely ally themselves with the telling method; and since they show relatively little definiteness of form, but waver back and forth be-

tween telling and developing, perhaps Mr. Charters, in his progressive little book, "Methods of Teaching," is justified in branding such procedures the "Informal Method."

C. Questioning

The most efficient tool of the development method is the *question*, hence the extreme value of the art of questioning. We have all seen the development method wander from its direct purpose, through irrelevant questions either from the teacher or from the students. It is a matter of no small importance, therefore, to know what constitutes a relevant question.

We have already noted that every lesson must deal with a problem which is known both to teacher and to students. No person works well unless he understands what his problem is. If we do not know what we are working for, our work cannot be intelligent; it is drudgery. If we do know our problem, then any question which points to its solution is relevant; and any question which does not point to its solution is irrelevant.

Principle. — The relevancy or irrelevancy of a question is determined by referring it to the lesson problem.

If the child asks a question that appears to be irrelevant, the teacher should at once ask, "What does this have to do with the lesson problem?" It is unsafe to jump at the conclusion that a question is irrelevant; for children do

not think as logically as teachers generally do, and the child may be able to show that his question which appears irrelevant is, in reality, quite relevant.

In framing questions, the teacher must see that they are clear; that is, that the children can see through the questions and readily discern their meaning. Strange words or strange orders of words confuse any mind; and we teachers are all guilty, and often guilty, here. "Who can isolate the generalization?" is probably not a clear question for a fifth-grade arithmetic class; but "Who can state the rule?" is probably clear. So, too, the shorter the question, the more readily, other things equal, a mind can grasp it. Long sentences, especially if loose, puzzle all of us. Again, the question that is ambiguous is not good. The question should point toward a definite answer. "What do you see?" is a very indefinite question to be aimed at bringing out the statement of a generalization; yet we often hear it. Finally, a question should require definite thought to answer. Questions which suggest the answer, and hence are called "leading questions"; questions that foster guessing; and questions that can be answered by "yes" or "no" with little thought, are not reliable tools of education.

Principle. — Questions should be clear, concise, and definite, and require a distinct mental effort leading to the answer.

6. METHODS OF TRAINING THE WILL

We have already seen that the child is born with a rich supply of impulses, and that these impulses are bound to discharge unless inhibited. Our purpose now is to see how these impulses are to be controlled to the end of realizing the values of life.

To begin with, the impulse is the will of the child. In other words, impulse is primitive will. Since the child is born with his stock of impulses, education cannot get back of them, but must accept them. All will-training, therefore, must start with the impulse.

Principle. — The beginning point of all will-training is the impulse.

We have also seen (1) that any impulse is ready to go out toward any object that promises to satisfy it; (2) that any object that does promise satisfaction to the impulse is felt to be useful, and hence it is interesting; and (3) that attention always chooses the most interesting object. It is therefore evident that the teacher does not have to create attention, but that her work is that of directing it, through interest.

Principle. — Attention is not something which the teacher must create, but a force which she must direct, through interest.

The impulses of the child must discharge before the child can come into active contact with the world and

thus get experience. It is in this light that the teacher must view the multitudinous little impulses of the child, if she would understand her problem of will-training. When an impulse has discharged, or, better still, after it has discharged frequently, the child knows something of what the impulse means. Thus with the whole multitude of impulses discharging, the child acquires from experience a stock of ideas which guide him in controlling his impulses. When he has come to know the meaning of his impulses, and experience has given him control of his voluntary muscles, he may control his impulses. Experience, again, is the only teacher.

Principle. — The intellectual side of will-training, or discipline, consists in acquiring a stock of ideas with which to control the impulses.

We all know from experience how easy it is for an impulse to discharge "before we think"; that is, before we have viewed the pending act in the light of past experience. So, too, we all know that impulsive conduct is not trustworthy, and that conduct is reliable in the degree that impulse is guided by an adequate past experience. The lesson to be learned by every one is, therefore, that of holding the impulses in check until they can be viewed in the light of past experience. Such a will is the mature, the developed will.

Principle. — The higher will is impulse guided and controlled by the stock of ideas gained from experience.

In order that the individual may will to realize the values of life, the ends that are good for every one, rather than his own selfish motives, we must train his emotions. He must be interested in the values of life. This is only another way of saying that he must see and feel the usefulness of the values of life. Biology gives us a far-reaching law that governs here : —

Principle. — A given individual or species gives to other individuals or species as much aid as is necessary to enable the given individual or species to accomplish its own ends.

We may now call upon experience to teach us just what this law means.

The peony secretes the brown fluid, found on its bud, for the purpose of attracting the ant. The ant appropriates the fluid, and in return acts as a bodyguard for the plant against offensive insects. Flowers secrete nectar; not to feed the bee, but to induce the bee to carry pollen. The fruit tree surrounds its seeds with fleshy food; not to feed animals, but to induce animals to carry away and disseminate the embittered or stony-covered seed within the fruit. The ant cares for the corn root louse; not for the sake of the louse, but for the food which the well-cared-for louse gives the ant in return.

Nature has unified infrahuman life through the baser instincts; but for man, who is made in the image of his Creator, it is reserved to push on to a higher unity through

reason. We have seen that the fundamental law of mind is unity, and that the ultimate problem of the human intellect is to think the world into the ultimate unity, the universe. An enduring world must be a world of unity. A world of disharmony cannot endure; for disharmony means strife, and strife is destructive. If, therefore, we are to have a world, a universe, we must believe in unity, must will a universe.

We recognize as reasonable only those individuals who are willing to share our interests; for no man can live unto himself. Whoever wills a universe, therefore, must will whatever is good for every one; and he must refuse to will what is not good for every one. Such a will, as we have seen, is the moral will. We all believe that morality is good for every one, and that an immoral act is bad for every one, including the doer. The thief, the liar, the robber, indeed the doer of any immoral act, cannot be happy, for the reason that his act violates the deepest law of his mind; namely, unity. Sooner or later his deepest will must cry out against the immoral act, must refuse to own it; that is, his "conscience must trouble him." Perhaps he will self-reveal to the world his own immoral deed, and beg for the world's punishment to undo his deed according to the algebraic law that "a negative by a negative gives a positive."

Thus the biological law of assistance holds for every one, and the principle of give and take must hold. We must

teach the child so that he may clearly see in time that the best world for him is the world that is best for every one. Any act that tends to make a better world is therefore useful to him, as well as to all; and such an act must interest him when he discerns it in this light. It is in this way that the emotion is to be trained to realize the moral will. The road to other lives must pass through the self; otherwise there could be no sympathy, no "feeling with a self." Religion is right when it commands us, "Thou shalt love thy neighbor as thyself." Ethics, too, is right when it accepts this command, but puts the emphasis on "thy neighbor." Selfishness hardly needs emphasis, even in this day. All higher thought demands the complete surrender of the personal interests to what is regarded as of universal interest. The question which the teaching profession earnestly asks is, "How is such a surrender to be brought about?" Philosophy tells us only that this is the end to be reached; it leaves the method to another science; namely, pedagogy. Our next step is therefore evident.

The surrender of the personal interests to the universal interests can never be realized by taking the child out of himself. It is not self-abnegation that we want, but unity; that is, we must teach the child to discern that only that which is good for every one is ultimately good for himself. When he has actually discerned the value, the use of the moral life, he can be interested in morality.

We have seen that the most natively interesting thing to a man is his own personal self, and our problem here is to enable the child to clearly see that his own highest interests are identical with the highest interests of all.

Principle. — The emotional side of will-training, or discipline, consists in developing interest in morality, by leading the child to see that his own highest interests are identical with those of the race.

Since the development of the moral will is a matter of extreme importance, the method employed should be inductive. We can afford to take no chances in this vital matter. We have already pointed out how the school games can be utilized in developing the moral will, but the process must not stop there. The schoolroom and the school grounds are teeming with concrete material for moral teaching. There is no school child who has not felt the inner pangs of wrong doing, nor is there one who has not felt the happiness of right doing. These experiences are to be seized, and their significance revealed. Thus we are to lay a genuine experience basis for moral training.

After a real experience basis has been laid, we can extend our teaching in time and place. The community is full of concrete material, and history and literature can widen almost to infinity. The vital point is the experience basis, let us repeat; and what a pity to take up history and literature, until this basis has been well es-

tablished. This work must be real and candid and sincere. There must be nothing to savor of moral platitudes, of nagging, of faultfinding, of threatening, of "goody-goody." We have all seen the weakness of such measures. Just in the degree that the child is led to see and feel the relation of his conduct to his own inner freedom is the teaching of morals effective.

It is evident that conduct can never be reliable if it is impulsive; hence the individual must learn to hold the impulses in check until they have been viewed in the light of past experience. This is only another way of saying that the individual must voluntarily attend to his impulses. In no other way can his acts be other than impulsive. Voluntary attention is therefore the very threshold of morality.

Principle. — The threshold of morality is voluntary attention.

The power of voluntary attention is therefore to be strengthened by exercise. There is no conflict between the highest interest and voluntary attention. We want the individual to attend to whatever is of the highest value, hence of the highest interest to him. Our difficulty is, some little attractive thing catches our attention, and our impulses are at work upon it; while the more significant thing is excluded. The habit of scanning our impulses, of holding them back voluntarily until the highest interest can be decided upon, is therefore of the highest

importance. This habit, like all habits, is to be established according to the law of habit formation. Since this law will be readily appreciated, it may be stated directly and then illustrated.

Principle (Law of Habit Formation). — (1) Arouse a strong impulse to do the chosen act by viewing it in terms of the deepest will, the ideal; (2) allow this impulse to discharge at the first opportunity, and as often thereafter as possible; (3) allow no exceptions to occur.

To illustrate, we may suppose the teacher or parent wishes to establish in the child the habit of telling the truth. The first step is to get the child to discern that truth telling is for his own highest good, as well as for the highest good of others. The second step is to discharge this resolution, this deepest will, while the impulse is hot to do so, and to continue to let it discharge at every opportunity. The third step is to see to it that no exceptions occur; for every exception registers its influence in counteracting the new habit.

In breaking a bad habit, substitution is far better than repression. The world is full of examples of failures in attempts to take away an end toward which an impulse drives, and leave the impulse with nothing to work on. Now, nowhere in the world of experience can we take something out, and leave nothing in; and a vacuum of conduct is neither possible nor desirable. No impulse is bad at root, and we do not want to kill off our impulses,

even if we could. The impulse to lie is, at root, the impulse to be free, the impulse of independence; and this we would not kill. The impulse here has simply gone out to a bad end; a mistaken notion has misled it. Our business is therefore to give the impulse a better end to go out to; namely, real freedom through truth telling. Truth is unity, freedom; for it fits in anywhere. So, too, though a man drinks intoxicants, we would not kill the impulse to drink; but we should give the man a more enlightened drink. Again, we are not to try to kill off the fighting impulse; but we want the fighting impulse to discharge in noble ways, rather than through the fist.

Principle. — Bad habits are to be inhibited by substitution, rather than by repression.

It is pleasing to note how some of our more enlightened communities are routing the saloon. Studying the saloon attractions, these people find that the motives to have a warm room, an agreeable evening with company, and so on, lead many a poor boy into the saloon. They therefore set up a clubroom alongside the saloon, and fill it with the comforts of a winter's evening, with the intoxicants left out. This is substitution; and the plan is a magnificent step in the right direction.

In school, as elsewhere, it often happens that a mere suggestion leads to reform. Humanity is not normally depraved; and supplying a right idea may often set things right. Thus if a child is inclined to grumble over his

work, the teacher may approach him and frankly ask, "Is this the Miller of the Dee?" It may be that this attractive idea suddenly appearing here to the child mind will bring a new motive. Suggestion is ever at work in the schoolroom as elsewhere, and the following terse statement of its law we may accept here: —

Principle (Law of Suggestion). — Every idea is attended by an impulse that will discharge it unless inhibited.

This law acts quite as readily in a negative as in a positive way. Thus the father who tells his son how he used to cause trouble in school may stir up troubles enough in the mind of his son, who had perhaps not thought of them before. The teacher who lays down a school rule is very likely to find some boy who is anxious to test what in higher circles would be called its "constitutionality." Children are far more susceptible to suggestion than adults, and girls more than boys; but suggestion is an indispensable factor in all mental life. Tears readily bring tears, and joy is really contagious; indeed, the association of an idea of any movement, with the muscles that execute that movement, is most intimate. In short, the idea is the conscious counterpart of a nerve current already on the way to cause the movement; and it will cause it unless inhibited.

The fact that teachers are so much engaged with the task of school management readily leads them to depreci-

ate the child that is "full of impulses," and to appreciate the one who can "sit still and behave." We have already seen that without impulses to do things, there could be no education. This is only a better way of stating the old law that "self-activity is the basis of all learning." A teacher could not get a purchase on a child without impulses; and the more impulses, the more handles. Even if an impulse gives now a bad reaction, it is better than no reaction at all, for the teacher may substitute a good end for the bad one; while if there were no impulse at all, no end could be reached. However much a man may wish his horse to drink, he must wait for the impulse. Thus it is evident that the following law, partly from James and partly from Thorndike, is true:—

Principle. — Some reaction, even if not good, is better than no reaction; and ability in discipline must be measured by the sum of positive well-doing, rather than by the absence of bad behavior.

The weakness of the child's will is revealed by the easy shifting of the attention from one thing to another. As the growing child gains control over his impulses, his ability to attend voluntarily will be found to increase with his control; for the one ability means the other; that is, —

Principle. — The strength of will is shown by the amount of voluntary attention that the individual is able to command.

It is of the highest importance that the teacher

strengthen the wills of her children by exercising continually the voluntary attention; for we have already seen that voluntary attention is the threshold of morality. Since we are all full of impulses, it is not difficult to see why the voluntary attention is so transitory; for one impulse pushes by another, and attention shifts. The fact is, however, momentary attention is all that we need; for it takes but a moment to determine which of two or more impulses is more significant, if we really know at all. If not, the impulse to wait and decide later is with us. But if we follow one impulse after another, unable to hold them in check until we can discern which is most significant, then our will is still impulsive, still primitive, still unreliable.

The child has but little power of voluntary attention, but it is very important that that little be increased and strengthened by exercise. Since the power to attend voluntarily is the hope of morality, the teacher must not fail to continue to exercise the power to its full capacity; and this means more sustained attention through the years. The child must be taught to pull back the flitting attention, with new resolves to keep it in control; and the mature student should be able to give his attention to what he wills.

Principle. — Continual demands must be made on the voluntary attention of every student, increasing the time of sustained attention with the years of development.

Teachers are at a continual loss to know how to assist students in their work, without weakening the student's will. We all meet tasks that are too much for us, and hence we all need assistance at times. Now, either too much or too little assistance weakens the will; the former, by taking away the opportunity of exercising the will; the latter, by defeating the will. The love of overcoming obstacles, the glow of mastery, is a necessary concomitant of a strong will; and nothing so weakens us as continual defeat. When therefore the individual meets a task that is too much for him, all the assistance he needs is just enough to enable him to proceed; that is, just enough to free his own efforts. Either more or less than this must prove disastrous to will.

Principle. — In giving assistance to a student, give only enough to set free the student's own efforts.

To illustrate this important law, suppose we take a child who is baffled in his attempt to find his error in a problem in multiplication. Suppose the child's work shows as follows: —

$$\begin{array}{r}
 3148 \\
 76 \\
 \hline
 18888 \\
 23036 \\
 \hline
 249248
 \end{array}$$

The teacher could hardly be justified in working out the problem for the child ; but she runs through the problem to locate the error, and she finds it in the last multiplication. Remembering that a review, or second multiplication, easily follows the habit partially established by the first effort, the teacher calls on the child to multiply through aloud by the seven tens. He so multiplies. Perhaps the effort aloud locates for the boy the long missing mistake ; but if not, then the teacher asks, "How many did you have to add to the last product (pointing to the 23) ? The child answers "one." "Go on, now," is the teacher's order. The boy proceeds, "Seven threes are twenty-one, and one is twenty-three" (habit, clearly). "Twenty-one and one?" asks the teacher. "Twenty-two," is the reply. The boy looks with the usual dumfounded gaze, erases, and victoriously corrects.

It will be noted that the teacher is here only guiding to the error. The child is working, and the teacher leads him to find his own error. When he finds it with such help, he is ready to proceed, uninjured. More assistance would have taken away the child's opportunity to win, and thus left him correspondingly weak; while less assistance probably would have added to the defeat.

The teacher should not fail to note that the *question* is the fitting tool used here in giving assistance. It is commonly the very best means of giving wholesome assistance, for the reason that it may succeed in giving a legiti-

mate minimum, and yet requiring a legitimate maximum.

Principle. — The question is an efficient tool for giving assistance that is needed, for the reason that it may be made to give a legitimate minimum, and yet require a legitimate maximum.

CHAPTER VII

PROFESSIONAL CRITICISM

WE started out in this book by stating that the aim of education is to direct the child's experience to the end of making him able and willing to realize the values of life. We have now worked out the detailed analysis of this aim by showing (1) what the values of life are, (2) that experience is the only cue to life values, (3) that the manifold experiences which the race has treasured up, in the belief that they are the best means of realizing the aim of education, are represented by the course of study, and (4) what each subject of the course of study is expected to do in realizing the aim of education. Having therefore determined what we would do for the child, in the hope of realizing our aim, our next problem was the serious one of getting hold of the child's will in order to induce him to receive the experiences represented by the course of study. We have shown (5) that the only motive of mind is interest, (6) that the immediate basis of all interest is use, and that ultimately all interest is based on the native impulses, the instincts. We have shown (7) what the native impulses

of the human being are, and (8) that the teacher is the mighty influence which manipulates the impulses of the child in order to get him to receive the experiences which we believe will make him able and willing to realize the values of life. Next we took up (9) the formal aspects, or methods, of giving the experiences, ending with (10) the methods of dealing with the child will, the real child which we aim to make able and willing to realize the life values. Having therefore finished the task of working out the intricate process of education, we turn now to the important matter of judging the efficiency of any effort to carry out the process ; that is, to professional criticism.

The whole race is interested in the business of education, and a great army of specialists is kept constantly at work. As teaching experience grows, the law of varying concomitants is at work upon it; and far-reaching general notions, principles of teaching, are thus being isolated and established. When we have established a principle of teaching, that principle becomes at once a standard for judging teaching efforts. This is the great function of the principle. If a principle is restated, essentially in the second person, so as to guide directly in doing things, it becomes a rule. To illustrate, the statement "Interest is a feeling of the usefulness of objects" is a principle; and by it we can judge the efforts to create interest. Restated "to create interest in an object, reveal its use in reaching a desired end," it becomes a rule for proceeding

to create interest. Summarizing, we have essentially the law advanced by Dewey, —

Principle. — Rules are practical; they are statements of ways of doing things: principles are intellectual; they are formulated standards of judging things.

It is now evident that any criticism worth the name must be founded on principle; and that until one is armed with the principles governing a given process, one is hardly competent to judge that process. Any subject matter becomes science, when it is reduced to principles; and we therefore have a science of education just in the degree that we have established principles of education. Teaching is a progressive art in the degree that it is guided by such principles.

Principle. — Criticism, pedagogically considered, is judging school work in terms of principles of education.

Any general notion, any principle, covers its given field of experience only to date. Wider experience is ever likely to change any general notion, hence a principle can hardly represent absolute truth; indeed, absolute truth is hardly known to man. It is therefore evident that the teacher who is to move forward professionally must adapt herself to progressive changes in the theory of teaching.

Principle. — Principles can hardly represent absolute truth; hence the progressive teacher adapts her methods to progressive changes in the theory of teaching.

The term "theory" is here used in the scientific sense. No teacher should fear the word "theory," when used in this sense. The untrained teacher easily comes to look upon theory as a mass of hazy visions, not yet adapted to the real work of teaching. Scientifically, theory means the what, the why, and the how of doing things. We must have theory in any process. The baker bakes bread according to theory, the physician works according to theory, and we all eat and sleep and work and live according to theory. Scientific theory is the essence of human experience, and we must value it. Briefly told, our theory is the ideal toward which we are striving; and since our practice is never quite up to our ideals, it is true that theory is always in advance of practice.

Principle.— Educational theory is the what, the why, and the how of teaching; and it is always in advance of practice.

The moment one begins to talk of educational theory, many teachers think of psychology. Many a worthy teacher has fallen into what James calls a "bad conscience," because she is a poor psychologist. The fact is, psychology is quite overrated just now, and the teaching profession is expecting too much from it. There is a little psychology that is of immense value to teachers; and there is much psychology that is of little or no value to teachers. The real value of psychology in teaching lies in the fact that it reveals how experience acts in securing

efficiency. In so far as it does this, it serves as a standard of judging methods of handling experience.

Principle. — Psychology is a valuable ally of pedagogy in so far as it reveals the ways in which experience acts to secure efficiency, and thus serves as a basis of judging the validity of methods of dealing with experience.

Let the psychologists proceed with their study of consciousness. Let them discover and hand over to the teaching profession just as many valid laws of dealing with experience as they can; for the teaching profession can take up these laws and enrich them with its own teaching experience, and apply them to education faster than the psychologists can derive them.

— The most serious work in educational theory to-day is the effort to reduce teaching experience to sound principles. When such principles have been established, the teacher should strive to command them, not mechanically, but vitally; for her teaching should be based upon them. When teachers have learned to think school work in terms of sound principles of education, the day of fads and of cheap devices will be at an end. When that day has arrived, the teacher will be ready to view a new method critically; that is, in terms of educational principles, before accepting or rejecting it. Progress is change, but enduring change; and such change is welcomed by the teacher who is dynamic rather than static.

Principle. — The teacher should be ready to view a new method critically, before either accepting or rejecting it.

It now appears that one who is to supervise teaching must be especially skillful in thinking school work in terms of principles. The supervisor must be able to elevate teachers with her superior insight and unifying influence. The supervisor is thus a teacher of teachers, an influencer of influencers, and her educative influence is raised to a mighty power. We must concede that we have some individuals in the teaching profession who ought not to be there, and they need their sad deficiencies pointed out in ways that will eliminate such teachers themselves; but the truth is also evident that we have a great army of worthy, sensible, and ambitious men and women who need to be assisted in animating ways. The law of assistance holds here. Whatever else the supervisor does, she is not to leave the worthy teacher devitalized. The teaching spirit is too valuable to be trampled upon. A supervisor's value may easily fall below zero through lack of sympathy, influence. When she has found a deficient school value, she must point it out to the teacher in a hopeful and sympathetic way. When the deficient value is located, it is the supervisor's duty to see that the means of reconstruction are at hand. Again we must cite the law of assistance, for we cannot afford to have the teacher weakened. The supervisor

may suggest the lines of reconstruction, and leave the competent teacher to create her own procedure; or she may find it necessary to work with the teacher in creating her procedure.

Principle. — The supervisor's criticism should vitalize and not devitalize the teacher, by revealing deficient values, and, if necessary, by indicating the means by which the teacher may reconstruct and create her own procedure.

The supervisor's work should be evolutionary, rather than revolutionary. A thousand wrongs may be in sight; if so, a thousand wrongs are to be righted. Perchance the teacher is not incompetent, but the community backward, and a thousand outer causes in the way. Indeed, the teacher and the school may be doing well, relatively speaking; yet when measured by absolute standards, the situation may be discouraging, and seem to call for revolutionary means. So, too, it is not often justice to measure two teachers by the same standard, but each is to be measured by a relative standard; that is, by comparing the present conditions with the improvement made, or that could reasonably be expected to have been made under the existing conditions. The teacher's point of view is to be seen along with others, and total conditions taken into consideration.

Principle. — The supervisor should apply relative rather than absolute standards.

In any criticism, the critic should see the strong as well as the weak features of the work. Appreciative criticism makes a good introduction for the negative to follow, and the teacher needs to have her strength revealed, as well as her deficiencies. It is often well for the critic to close her eyes to some deficiencies. Too much criticism discourages any teacher; hence it may often be well for the criticism to deal, not with many, but with the most significant features. It is hard to think of a piece of school work so poorly done that nothing favorable may be said of it; and with young teachers, especially, appreciative criticism wins the feelings that are easily wounded by the negative criticism. The criticism should be honest, sympathetic, and hopeful, with a reasonable commingling of appreciation, negation, and construction.

Principle. — The significant features of school work, both appreciative and negative, should first be criticized; and criticism should be given in accordance with the law of assistance.

We all know how easy it is to be disturbed when any one comes in to see our work. The more competent we think the critic, the more we are likely to be disturbed. Now the fact is, the more competent the critic, the more ready she is to understand the teacher's situation, and to see the teacher's side of things. Good criticism is not so hard to bear as unreasonable and incompetent criticism. In any case, the teacher should agree with the criticism if it

is just; and the feeling of sympathy between the teacher and the critic is a unity that both should seek. Both are laboring for one end; and disharmony is destructive. No teaching force is at its best until it works in unity.

Nowhere in the world is there a more worthy work than that of a school force working in unity for the unity of the race. Teachers should feel the beauty, the value, and the sacredness of their mission. The value of the product, the worth of the aim of education realized, is the real inspiration, the real ground of dignity, the real pay. A deeper insight into the principles underlying our art will increase that pay; and along with a better understanding of our art, will come a closer fellowship, a richer experience, a better race, and a happier day.

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